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ABSTRACT

This collection of eight papers and six "data squibs" (short research findings) are based on topics and languages under study by students and staff of the linguistics program of the University of North Dakota. The papers are: (1) "Dakota Sioux Objects" (Thomas M. Pinson); (2) "The Tapir: A Yanomami Text" (Irma Thiele); (3) "One Less Crazy Rule" (Stephen A. Martlett); (4) "Writing, Teacher Training, and Grammar" (Jim Meyer); (5) "The Paragraph: Toward a Richer Understanding" (Jim Meyer and Brendan Cooney); (6) "The Existential Use of Positional Verbs in Texmelucan Zapotec" (Charles Speck); (7) "Nontonal Floating Features as Grammatical Morphemes" (James S. Roberts); (8) "The Distribution and Properties of Babole Prenasalized Segments" (Myles Leitch). The research squibs are: "Vowel Features in Madija" (Patsy Adams Liclan and Stephen A. Martlett); "Vowel Length in Seri Possessed Nouns" (Stephen A. Martlett and Mary B. Moser); "Seri Vowels and the Obligatory Contour Principle" (Stephen A. Martlett and Mary B. Moser); "Switch Reference in Seri" (Stephen A. Martlett and Mary B. Moser); Nasalization in Huajuapan Mixtec" (Stephen A. Martlett); and "Texmelucan Zapotec Regular Verbs" (Charles Speck). (MDM)

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Work Papers of the Summer Institute of Linguistics, University of North Dakota Session

1994 Volume 38

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Preface

The work papers this summer, as always, represent a wide variety of languages and topics under study by students and staff at the linguistics program of the University of North Dakota. The lead article is a slightly revised version of Thomas Pinson's 1990 thesis from UND and presents research on the Dakota language.

The second contribution, by Irma Thiele, is a text from the Yanomami language of Brazil, presented within the model being developed for a text archive in Mexico, as taught during a text glossing seminar at UND in 1993.

A short article by Steve Marlett sets the record straight on one small part of Seri grammar.

The first article by Jim Meyer argues that grammar is much more effectively and enjoyably taught when it is integrated with student writing, not compartmentalized. The second, coauthored with Gordon College student Brendan Cooney, reviews the history of paragraph analysis and presents two new perspectives on it.

Charles Speck presents an overview of the semantics and distribution of positional verbs used as existentials in Texmelucan Zapotec (Mexico).

Finally, an analysis of important facts about the prenasalized segments in Babole (Congo) by Myles Leitch is presented within the framework of Optimality Theory.

A new section, called *Data Squibs*, makes its first appearance this year. These contributions provide easy access to data which should be of interest to linguists and linguistics teachers. The hope is that these will increase communication between field linguists and theoretical linguists, and draw attention to data which may have already appeared in places or formats which are less accessible. Data squibs also provide an outlet for interesting and perhaps significant data that does not necessarily have an explanation in any theory with which the author is familiar.

Data squibs consist of two parts. The first part is some appropriate information about the language, the source of the data, and reference to pertinent literature. It also includes background information on the data and a brief discussion of what is of interest. This section does not contain a solution per se, but may include pointers to a solution.

The second part is the data, carefully selected and arranged. In general, phonological data are presented in IPA transcription, regardless of the transcription used in previous publications.

People are encouraged to write to the authors with questions and comments. The editors regret that more authors are not represented in this section; we hope that the appearance of these few data squibs will prompt the submission of many others in the future.

We thank Andy Black and Stephen Levinsohn for their help in reviewing submissions. Our sincere thanks also go to Catherine Leckrone and Becky Moser for their able copy-editing.

S.M.
J.M.

Dakota Sioux Objects

Thomas M. Pinson

This article is a study of certain syntactic and morphological processes in Dakota Sioux within the Relational Grammar framework. There are three main topics dealt with as they relate to verb agreement: advancements to direct object, Possessor Ascension, and Clause Union. All three of these topics distinquish between direct objects, indirect objects, and obliques.

Verb agreement is examined and shown to consist of two distinct systems: person agreement and number agreement. These two systems give empirical evidence to the support of the multilevel relational network of Unaccusative and Reflexive clauses. It is also shown that an analysis which posits advancements to direct object allows for concise generalizations, whereas an analysis which does not include advancements to direct object cannot capture these generalizations.

There are two types of Possessor Ascension attested cross-linguistically: one in which the possessor assumes the grammatical relation of the host, and one in which the possessor assumes a grammatical relation other than the host. This article shows that Dakota Sioux has both constructions.

The last topic dealt with is Clause Union, in particular Causative Union. This article presents evidence that a union construction in Sioux is superficially monoclausal yet contains two predicates. After the evidence for the multipredicate clause is presented, verb agreement is again examined since both predicates may show person and number agreement.

1. Introduction

1.1. Goals of the Article

This article has two goals. The first is to present certain syntactic constructions in Dakota Sioux analyzed within the Relational Grammar (henceforth RG) framework which demonstrate the difference between direct and indirect objects. I will first present arguments for the RG analysis of Sioux verb agreement. Included under this topic of verb agreement is the notion of advancements and how this affects the analysis of the third person animate plural agreement, `wičha-`.[1] I will then discuss the construction known as Possessor Ascension. The last topic I

---

[1] This article is a slightly edited version of my 1990 M.A. Thesis at the University of North Dakota.

I would like to thank Chuck Speck for his helpful comments on the Possessor Ascension section. I would also like to thank my M.A. committee, Des Derbyshire and Steve Quackenbush, with special thanks to my advisor, Steve Marlett, for all their helpful criticism and advice.

Abbreviations: 1p - First Person Plural, 1s - First Person Singular, 2p - Second Person Plural, 2s - Second Person Singular, 3p - Third Person Plural, Adv - Advancement, Ben - Benefactive, Caus - Causative, Cho - Chomeur, Comp - Complementizer, Dat - Dative, Def - Definite, Dem - Demonstrative, Dur - Durative, Hab - Habitual, Indf - Indefinite, Ins - Instrument, Loc - Locative, N - Nominative, O - Objective, Obl - Oblique, Pl - Plural, Poss - Possessive, Pot - Potential, PRfl - Possessor Reflexive, QM - Question Marker, Rdp - Reduplication, Rfl, Reflexive.

The orthography used in this article conforms to the University of Colorado writing system (Taylor 1975, Rood and Taylor 1976). The characters ȟ and ǧ are the voiceless and voiced velar fricatives, respectively.

Stops

Aspirated	ph	th	čh	kh
Unaspirated	p	t	č	k
Glottal	p'	t'	č'	k'
Voiced	b	(d)*		g

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will present is Clause Union. All of these constructions demonstrate a distinction between the two kinds of objects.

The second goal is to show how RG characterizes these constructions in cross-linguistically viable terms. Although there has already been extensive work done in Dakota Sioux, much of it has been purely descriptive. It is not the purpose of this article to repeat those previous works. Rather, my purpose is to apply the RG framework to Dakota Sioux. The RG analysis reveals that these constructions are not unique but have already been attested in natural language.

I assume familiarity with the Relational Grammar framework throughout this article.

1.2. Previous Work and Sources of Data

Dakota Sioux has been very well documented. There has been work in all dialects, but predominantly in the Teton (Lakhota) and Santee (Dakota) dialects. The earliest work was done by Stephen Riggs (1890 and 1893). He produced a dictionary in the Santee and Yankton (Nakota) dialects and later a book containing a grammar, texts, and an ethnography. The dictionary was reprinted in 1968 and the grammar in 1973. Then Franz Boas and Ella Deloria (1939, 1941) wrote a very comprehensive description of phonological, morphological, and syntactic processes of the Teton, Santee, and Yankton dialects. About that time Eugene Buechel (1939) wrote A *Grammar of Lakota: the language of the Teton Sioux Indians* and later Paul Manhart published Buechel's (1970 and 1983) dictionary.

More recent work in Lakhota includes David Rood and Allan Taylor's (1976) two volume *Beginning Lakhota*, a pedagogical grammar of Lakhota. Robert Van Valin, Jr. (1977a) wrote a grammar of Lakhota syntax using Role and Reference Grammar, focusing on relative and complement clauses. And Janis Williamson (1984) wrote a detailed Lakhota grammar in the Government and Binding Theory.

Another important work is Patricia Shaw's (1980) *Theoretical Issues in Dakota Phonology and Morphology*, written from the perspective of generative phonology. Her work was a comparison of all the Dakota dialects: Teton, Santee, Yankton, Stoney, and Assiniboine.

And lastly, Plunkett and McKeever's (1986) *Relational Grammar Approach to Verb Agreement in Lakota* examined several constructions, such as intransitive and reflexive clauses, and argued that a disjunctively ordered verb agreement rule was necessary for Sioux. This article goes beyond their work by treating person and number agreement as separate agreement systems, by examining advancements to direct object more closely, and by discussing the Possessor Ascension and Clause Union constructions in Sioux. For a list of other work in Sioux, consult Rood's (1977) bibliography.

Much of the data in the literature is from Lakhota sources. My data are primarily from Dakota sources. I began collecting data in a Field Methods course of the Summer Insitute of

---

Fricatives					
Voiceless		s	š	ȟ	h
Glottal		s'	š'	ȟ'	
Voiced		z	ž	ǧ	
Liquid		(l)*			
Nasals	m	n			
Glides	w		y		
Vowels	i į		u ų		
(Plain and	e		o		
Nasalized)		a ą			

*The d is used in Dakota and the l in Lakhota.

Linguistics at the University of North Dakota in 1986. I continued gathering data through successive independent studies and brief trips to both the Crow Creek Reservation of South Dakota and the Devil's Lake Reservation of North Dakota. Grammatically, Lakhota and Dakota are similar; therefore I will use both Dakota and Lakhota data throughout this article. I would like to thank both of my Lakhota consultants: Velma Flying Bye and the late Walter Taken Alive. I would also like to thank Sandra McDonald and Paul Little who are Dakota speakers. Finally, I am indebted to the late Bert McBride for his endless patience with my tedious questions about the Dakota language.

2. Verb Agreement

2.1. Person and Number Agreement

There are two sets of verb agreement affixes in Dakota. Traditionally these have been labeled nominative and objective. Compare the following:

(1) A-ma-ya-pha.
Loc-1sO-2N-hit
You hit me.

(2) Taku wa-pazo.
something 1sN-show
I showed something.

In (1) `ma-` signals agreement with the first person singular direct object, and in (2) `wa-` signals agreement with the first person singular subject. Table 1 presents the singular affixes of these two sets.

Table 1. Singular Agreement Affixes

Nominative		*Objective*	
wa/bd-	1s	ma-	1s
ya/d-	2s	ni-	2s
Portmanteau: čhi-	1sN:2sO		

Agreement with third person singular is not overtly marked. The `bd-` and `d-` affixes of the nominative set are the allomorphs of `wa-` and `ya-`, respectively, for verbs beginning with `y`.[2] The portmanteau prefix `čhi-` is the surface realization of first person singular subject and second person singular object in lieu of `wa-ni-`. In Table 2 the plural affixes of both sets are presented.

Table 2. Plural Agreement Affixes

Nominative			*Objective*		
ųk-		1p dual	ųk-	-pi	1p
ųk-	-pi	1p			
ya/d-	-pi	2p	ni-	-pi	2p
	-pi	3p animate		-pi	3p
			wičha-		3p animate

The distinction of dual and plural first person is realized only in the nominative set. Consider the following:

---

[2] The same affixes in Lakhota are `bl-` and `l-`, respectively.

(3) a. ųk-o-ni-de-b.[3]
1p-?-2O-seek-Pl
We (> 2) are looking for you.

b. ųk-o-ni-de-pi.
1p-?-2O-seek-Pl
We (dual) are looking for you (plural).

c. He ųk-ode-b.
s/he 1p-seek-Pl
He was looking for us (dual or plural). or
We (> 2) were looking for him.

d. =(V 1977a:7)
ų-k'u
1p-give
We (dual) gave it to him.
**(He gave us (dual) it.)*

When Table 1 and Table 2 are compared it can be seen that there is overlap. Both second and third person affixes are the same in the two tables. The distinction between the two tables is primarily the plural suffix -pi and the first person morphemes. Except for the first person affixes, number is indicated by either the presence or lack of the plural affix. Table 2 also contains the morpheme wičha-, animate third person plural, which I will discuss below. Table 3 offers a simplified paradigm of the person affixes.

Table 3. Person Argeement Affixes

	Nominative	*Objective*
1s	wa/bd-	ma-
1p	ųk-	ųk-
2	ya/d-	ni-

It can be seen from Table 3 that the distinction between the nominative and the objective set does not exist in first person plural. Therefore the arguments I present from verb agreement will primarily consider first person singular and second person singular and plural.

Although traditionally the two sets were called nominative and objective, these names are misleading for certain intransitive verbs. The nominative affixes occur on some intransitive verbs, while the objective affixes occur on other intransitive verbs, as shown in (4) and (5). Clauses like those in (4) are known as unergative clauses in RG and clauses like those in (5) are known as unaccusative clauses.

(4) a. Wa-nųwą.
1sN-swim
I am swimming.

b. Ya-psiča.
2N-jump
You are jumping.

(5) a. M-ištima.
1sO-sleep
I was sleeping.

---

[3] There are several phonological processes which interact with the morphology, i.e. -pi reducing to -b. For a thorough discussion of these see Shaw 1980.

The ? in the word-for-word gloss indicates that the morpheme in question is not a usual prefix, but rather a discontinuous part of the root.

b. `Ni-t'a.`
`2O-die`
You are dying.

Consider now the following reflexive clauses.

(6) a. `Oyaza-m-ič'i-ya`
`hurt-1sO-Rfl-Caus`
I hurt myself.

b. `A-n-ič'i-pha.`
`Loc-2O-Rfl-hit`
You hit yourself.

It can be seen that in reflexive clauses the person agreement is from the objective set and the verb includes the morpheme `ič'i-`.[4]

Van Valin (1977a:26-27) formulated a verb agreement rule for Sioux, in the framework of Role and Reference Grammar. He claims that verb agreement can be accounted for using semantic notions. His rule may be stated as follows[5]:

(7) a. *Actor*, which includes the semantic roles of actor and experiencer, determines nominative agreement.
b. *Undergoer*, which includes the semantic roles experiencer, patient, goal, source and beneficiary, determines objective agreement.
c. *Site*, which includes the semantic roles of location, goal and source, determines objective agreement and a location postposition.

He describes the categories Actor, Undergoer, and Site as domains or continua of semantic roles. Which particular roles are included in each domain is language specific, but the continuum labels are universal. In more recent work in Role and Reference Grammar, Van Valin and Foley (1980:338) do not discuss the third domain, Site, but rather "postulate a single fundamental universal semantic opposition of Actor and Undergoer."

It is interesting to examine the similarity of the Role and Reference Grammar framework to that of the RG framework. RG posits grammatical relations as primitives. Role and Reference Grammar posits the notion of the opposition of Actor and Undergoer as fundamental. Both theories claim that it is somewhat language specific as to which semantic roles are associated with these notions. With regard to this, both theories claim that there are universal tendencies. A fundamental difference between the two theories is RG's claim that the notion of levels is important.

Van Valin's rule, as summarized by Van Valin and Foley (1980:337), is: all Actors determine the nominative affixes, and all Undergoers determine the objective affixes, regardless of grammatical relations. But when Van Valin's rule is examined more closely, one notices the overlap between continua. He admits it is necessary to refer to the verb type in order to determine whether an experiencer is an Actor or an Undergoer. He states that experiencers of active verbs are Actors and experiencers of stative verbs are Undergoers. He also gives examples of both verb types. From his examples it is clear that he means that subject experiencers of transitive clauses are Actors and all other experiencers are Undergoers.

Van Valin's rule for verb agreement works for transitive, unergative and unaccusative clauses, as can be seen in the following:

---

[4] There are three allomorphs of the reflexive morpheme: `igd-` (`igl-`) for verbs beginning with y, `ik-` for verbs beginning with p, and `ič'i-`.

[5] This is my account of Van Valin's rule. He presents his rule in two parts referring to the actual morphemes. I have combined these, and I refer to the nominative and objective sets.

(8) a. A-ma-ya-pha
Loc-1sO-2N-hit
You hit me.

b. Wa-nųwą
1sN-swim
I am swimming.

c. Ni-hįȟpa
2O-fall.down
You fell down.

In (8a-b) the subjects are both Actors, therefore the nominative affixes are used. The direct object in (8a) and the subject in (8c) are both Undergoers, thus the objective affixes are used. Now consider reflexive clauses again:

(9) A-n-ič'i-pha.
Loc-2O-Rfl-hit
You hit yourself.

Van Valin (1977a:30) notes that the sole nominal in clauses like (9) has two semantic roles assigned to it (i.e. actor and patient). He offers no explanation for the use of the objective affixes other than stipulating that ič'i-, the reflexive morpheme, requires that the objective affixes be used with it.

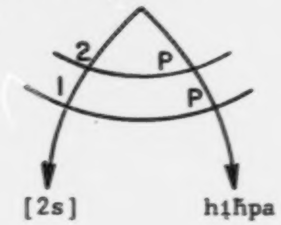
Plunkett and McKeever (1986) discuss the implications of several constructions, including unaccusative and reflexive clauses, for verb agreement in Sioux. Then they state the following rule for verb agreement (p. 101):

(10) a. Working 2s determine the objective agreement markers.
b. Nominals heading a 1-arc determine the nominative agreement markers.
Where (a) is disjunctively ordered with respect to (b).

Working 2s are discussed in Perlmutter 1982 (p. 314). Informally, a nominal is a working 2 if it is a 2 at some level and not a chomeur. Plunkett and McKeever (1986) argue that disjunctive ordering is necessary for Sioux verb agreement. It accounts for unaccusative clauses like (11) and reflexive clauses like (12). According to rule (10), unaccusative and reflexive clauses use the objective person agreement because the final 1 is also an initial 2. Thus Plunkett and McKeever's rule accounts for the verb agreement in reflexive clauses without having to refer to the morphology of Dakota.

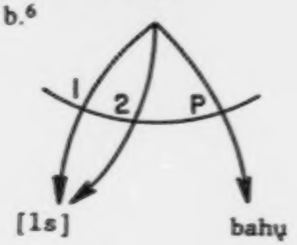
(11) a. Ni-hįȟpa
2O-fall.down
You fell down.

b.



(12) a. Ba-m-ič'i-hų.
Ins-1sO-Rfl-slash
I cut myself.

b.[6]



Although Plunkett and McKeever's rule (10) is coherent, I propose an alternative person agreement rule; a rule that eliminates the need for the notion of working 2. It is as follows:

(13) *Person Agreement Rule:*
The verb agrees in person with final nuclear terms.
a. Nominals heading a 2-arc determine the objective agreement markers.
b. Nominals heading a 1-arc determine the nominative agreement markers.
(a) is disjunctively ordered with respect to (b).

The notion of working 2 is unnecessary since a working 2 is either a final 1, 2, or 3 and there are no final 3s in Sioux. The disjunctive ordering is still necessary to account for the use of the objective person agreement with unaccusative and reflexive clauses. Therefore, this new rule (13) makes the same predictions as Plunkett and McKeever's rule (10).

The next area of agreement I will discuss is number agreement. Van Valin (1977a) does not discuss an agreement rule for number. The implication is that he includes it with his person agreement rule. Plunkett and McKeever (1986) also include number agreement with the nominative and objective person agreement, thereby allowing rule (10) to account for it. Examine (14).

(14) a. Wiyaka-g he ma-ya-k'u-b.
feather-Def Dem 1sO-2N-give-Pl
You (pl.) gave me the feather.

b. Hena ųk-ode-pi.
they 1p-seek-Pl
They were looking for us (>2).

c. ųk-ya-b.
1p-go-Pl
We (>2) went.

d. =(V 1977a:8)
ų-hi
1p-arrive
We (dual) arrive.

In each of these examples the plural morphemes occur with the person agreement as shown in Table 2. In (14a) and (14c) the subject is plural and this is signaled by the plural suffix. In (14b) both the subject and direct object are plural; this is also signaled by the plural suffix. But when the first person dual-plural distinction is examined, differences in the person agreement and number agreement systems can be seen. Plunkett and McKeever (1986) present the first person dual-plural distinction as it is shown in Table 2. Therefore, if number agreement follows rule (10), the dual-plural distinction should only be seen with subjects of transitive (cf. (14a)) and unergative verbs. In fact, this is not the case, as seen in the following examples:

---

[6] This relational network is incomplete, showing only the relevant stratum.

(15) =(V 1977a:9)

a. Ma-hąske.
1sO-tall
I am tall.

b. ų-hąske.
1p-tall
We (dual) are tall.

c. ų-hąska-pi.
1p-tall-Pl
We (>2) are tall.

(16) =(W 1984:96)

a. Na-m-ič'i-ħtake.
Ins-1sO-Rfl-kick
I kicked myself.

b. Na-ųk-ič'i-ħtake.
Ins-1p-Rfl-kick
We (dual) kicked ourselves.

c. Na-ųk-ič'i-ħtaka-pi
Ins-1p-Rfl-kick-Pl
We (>2) kicked ourselves.

The verb in 15 is unaccusative and the verb in (16) is reflexive. As mentioned above, and as can be seen in examples (15a) and (16a), both of these constructions use the objective person agreement. However, the first person dual-plural distinction is realized with them. This should not be the case according to Plunkett and McKeever (1986). They put the first person dual-plural distinction in the nominative set, not the objective set. Based on this, number agreement should be treated separate from person agreement. As mentioned above, final direct objects cannot make the first person dual-plural distinction, but the subjects of unaccusative verbs can. Therefore number agreement is sensitive to final relations.

(17) *Plural Agreement Rule:*
If a final nuclear term is plural, then affix -pi, except when the trigger is first person dual subject.

The fact that the number agreement system is different from the person agreement system presents an argument for the RG analysis of unaccusative verbs. The objective person agreement is triggered by the nominal of unaccusative verbs. To capture a generalization about verb agreement, RG posits that the initial stratum of the unaccusative clause has an initial 2 and no initial 1. The Final 1 Law (Perlmutter and Postal 1983b) requires that the final stratum contain a 1; thus the initial 2 typically advances to 1 in such clauses. If the first person dual nominal of an unaccusative verb is *not* a final subject, then according to rule (17) it should trigger -pi agreement on the verb. In fact, it does not. If it is a final subject, as I have claimed, then rule (17) correctly describes the facts. Therefore, the RG analysis allows for a generalization of the plural agreement rule and Dakota provides evidence for the final 1-hood of the unaccusative nominal.

An alternative analysis under which the nominal of an unaccusative clause is an object and not a subject, requires that the plural agreement rule be modified. The exception clause of rule (17) should then read "except when the trigger is first person dual subject or first person dual unaccusative object." This analysis misses the generalization that the unaccusative advancement analysis allows.

There are two other ways to represent number agreement that I have not discussed. One is the morpheme wičha-, which signals agreement with animate third person plural objects. Van Valin (1977a:26) noted this about wičha-: "Wičha- *them* is used to express the plural animate Patients, Goals, Sources or Beneficiaries of transitive verbs; it is not used with third person plural stative verbs."

He does not include it with his other person agreement rules (i.e., rule (7)), nor does he give a generalization to account for it.

Williamson (1984) says that wičha- is the suppletive form of -pi and that it is used only for the third person plural animate objects of transitive verbs. Examples (18a-c) illustrate.

(18) a. Ma-duzahą.
1sO-fast
I'm fast.

b. šųkawaką n-ithawa nina duzahą-pi.
horse 2O-belong very fast-Pl
Your horses are very fast.

c. šųka duzahą wičha-bd-uhą.
dog fast 3p-1sN-have
I have some fast dogs.

d. *Wičaša-g hena wičha-hąska.
man-Def those 3p-tall
(Those men are tall.)

e. Wičaša-g hena hąska-pi.
man-Def those tall-Pl
Those men are tall.

The verb duzahą is unaccusative, as seen by the objective person agreement in (18a). Notice, however, that wičha- is not used in (18b), but the plural suffix -pi is used. It can be seen in (18c) that wičha- signals agreement with the animate third person plural direct object. In (18d-e) hąska is unaccusative and takes the objective agreement, but wičha- renders the clause ungrammatical.

Plunkett and McKeever (1986) simply claim that wičha- fills the third person plural slot of the objective set. This cannot be the case since objective agreement is used with unaccusative verbs and wičha- cannot be used with them.

Reflexive clauses provide additional evidence that wičha- is not simply part of the objective set. Recall that the objective person agreement is used with reflexive clauses, as in (19a).

(19) =(W 1984:96,98)

a. Na-m-ič'i-ħtake.
Ins-1sO-Rfl-kick
I kicked myself.

b. Na-ič'i-ħtake-pi.
Ins-Rfl-kick-Pl
They kicked themselves.

c. *Wičh-igl-užąžą.
3p-Rfl-wash
(They wash themselves.)

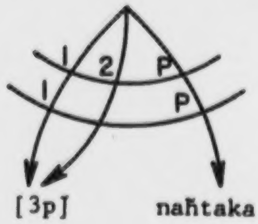
If wičha- had all the properties of the other objective affixes, it would be used in (19b); but the plural suffix -pi is used instead. In fact, when wičha- is used with a reflexive verb as in (19c), the clause is ungrammatical. Thus, the appropriate generalization must account for the fact that wičha- only signals agreement with *final* third person plural direct objects, and that it does not co-occur with -pi. Rule (17) is revised as follows:

(20) *Plural Agreement Rule (second version):*
a. If a final direct object is third person plural, then affix `wičha-`.
b. If a final nuclear term is plural, then affix `-pi`, except when the trigger is first person dual subject.
(a) is disjunctively ordered with respect to (b).

The disjunctive ordering accounts for final third person plural objects not triggering both `wičha-` and `-pi`. Plunkett and McKeever (1986) argue that disjunctive ordering is crucial to account for Dakota verb agreement. The disjunctive ordering in the revised Plural Agreement Rule, (20) accounts for the use of `wičha-` in certain clauses and `-pi` in others.

Up to now I have made no claims regarding the relational network of reflexive clauses other than the multiattachment in the initial stratum. Rosen (1981) argued that multiattachment in Italian is resolved by cancellation. I propose that Sioux reflexive clauses also resolve multiattachment by cancellation. Rule (20) predicts that a final object that is third person plural triggers `wičha-`. It also predicts that a final subject that is plural determines `-pi`. According to rule (20), a reflexive verb, such as in (19b), should have both `wičha-` and `-pi`, if the structure of reflexive clauses is as shown in (12b) (that is, without cancellation). But (19c) shows that `wičha-` cannot occur on reflexive verbs. Thus the final stratum of the reflexive relational network contains a 1-arc and no 2-arc, as in the following diagram : [7]

(21)



The last topic of number agreement that I have yet to discuss is verbal reduplication, as seen in the following examples:

(22) =(B&D 1941:157)

a. čhą kį hąsk-aska.
tree Def tall-Rdp
The trees are tall.

b. čhąwape kį šni-šniža.
leaves Def Rdp-wither
The leaves are withered.

c. Mila kį phe-phe-šni.
knife Def sharp-Rdp-NEG
The knives are not sharp.

Compare (22) to the following example:

(23) įyą-g he thąka.
stone-Def Dem big
The rock is big.

This reduplication occurs only when the subject is inanimate plural (Boas and Deloria 1941:157). When the final object is inanimate plural, neither reduplication nor `wičha-` are used, but rather plurality is expressed only in the noun phrase.

---

[7] An alternative analysis would be to assume that there is no cancellation, as shown in (12b). Then the generalization could be that `wičha-` signals agreement with a third person plural nominal that heads a 2-arc and no 1-arc. This would also account for the absence of `wičha-` in unaccusative clauses.

(24) `įyą   hena  iȟpeya-pi.`
`stone those throw-Pl`
They are throwing rocks.
**(He is throwing rocks.)*

Verb agreement with inanimate subjects presents more evidence for the RG analysis of unaccusative clauses. The argument is based on the fact that Sioux person agreement makes reference to the initial stratum of unaccusative clauses (i.e. the initial 2), and that Sioux number agreement makes reference to the final strata. This is seen in the clauses in (22). They are all unaccusative and take the objective person agreement. Yet only final subjects which are inanimate plural determine verb reduplication. Therefore the final stratum must contain a 1-arc. This supports the Final 1 Law.

The Plural Agreement Rule can contain three parts, referring to the three strategies for showing plural agreement: `wičha-`, `-pi`, and reduplication.

(25) *Plural Agreement Rule (third version):*
a. If a subject is inanimate plural, then perform verb reduplication.
b. If a final direct object is animate third person plural, then affix `wičha-`.
c. If a final nuclear term is animate plural, then affix `-pi`, except when trigger is first person dual subject.
(b) is disjunctively ordered with respect to (c).

In summary, I present the person agreement rule again, and a summary of my arguments for the RG analysis of unaccusative and reflexive clauses.

(26) *Person Agreement Rule:*
The verb agrees in person with final nuclear terms.
a. Nominals heading a 2-arc determine the objective agreement markers.
b. Nominals heading a 1-arc determine the nominative agreement markers.
(a) is disjunctively ordered with respect to (b).

I have argued for the multistratal analysis of unaccusative clauses. The argument for the 2-hood of the nominal is based on the fact that it determines objective person agreement. There are two arguments for the final 1-hood of the unaccusative nominal. The first is based on the generalization that only first person dual subjects fail to trigger the plural marker `-pi`. The unaccusative nominal must be a subject by this test, since it also fails to trigger `-pi`. The second argument is based on the generalization that only inanimate plural nominals which are subjects trigger verbal reduplication. The unaccusative nominal must be a subject by this test, since it triggers verbal reduplication. Under an alternative analysis of no advancement, these generalizations cannot be maintained.

I have also argued for the cancellation analysis of reflexive clauses in Sioux. This argument is based on the generalization for `wičha-`. `Wičha-` signals agreement with a third person animate plural final direct object. Since `wičha-` cannot occur in reflexive clauses, the final stratum does not contain a final 2.

2.2. Advancements to Direct Object

The verb agreement in Sioux that I have examined up to now has not included agreement with nominals such as Recipient, Goal, etc. The analysis of verb agreement has only included nominals such as Agents and Patients. I will now examine nominals that trigger verb agreement which are not Agents or Patients. In Sioux most animate nominals which are not Agents or Patients may or must head a 2-arc. The mechanism that Sioux uses for this is advancement to 2.

In this section I will first illustrate the different Advancees: 3, Benefactive, Locative, and others. Second, I will present arguments for the 2-hood of the Advancee based primarily on person and number agreement, as well as others. And last, I will consider alterative analyses.

2.2.1. The Data and Analyses

3-2 Advancement

Plunkett and McKeever (1986) argue that there is 3-2 advancement in Sioux. The following examples illustrate the verb agreeing with the non-Patient of the clause:

(27) a. Wa-pazo.
1sN-show
I show it.

b. Ma-ya-ki-pazo.
1sO-2N-Dat-show
You show it to me.

(28) a. =(V 1977a:43)
Iyuha wičha-k'u-pi.
all 3p-give-Pl
They gave it to all of them.

b. įyą-g de čhi-č'u.
stone-Def Dem 1sN:2O-give
I gave you this rock.

(29) a. A-ma-pha.
Loc-1sO-hit
He hit me.

b. =(W 1984:81)
John thapa ki a-ni-ki-phį-kte.
ball the Loc-2O-Dat-hit-Pot
John will hit the ball to you.

(30) a. Wa-dųwą.
1sN-sing
I sang.

b. Ma-ya-ki-dųwą-s'a.
1sO-2N-Dat-sing-Hab
You used to sing to me.

In all of these examples the verb shows agreement with nominals that are not the Patient. In (27b) the verb shows agreement with the first person Experiencer, in (28a-b) with the Recipients, in (29b) with the second person Goal, and in (30b) with the first person Addressee.[8] In all of these examples the animate non-Patient must trigger verb agreement. In RG terms this means that the advancement of 3 to 2 is obligatory.[9]

---

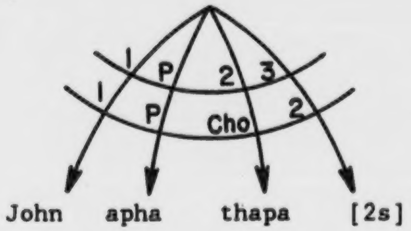
[8] Van Valin (1977a:15-9, 27) notes that ki- is semantically complex. The nominal associated with it may even be a Beneficiary for a given verb. When this is the case, the role assigned to the nominal associated with kiči- is Delegative for the same verb.

[9] Van Valin (1977a:7) included the following clause in his paradigms. It is his only example of a 3 not advancing to 2, but my language consultants were unable to confirm its acceptability.

(i) Ni-wičha-wa-k'u.
2O-3p-1sN-give
I give you to them. (in marriage)

Notice also, that in all the (b) examples there is an extra morpheme, `ki-`, affixed to the verb, with the exception of (28).[10] In the literature `ki-` has been called the Dative marker (Buechel 1939, Boas and Deloria 1941, Williamson 1984). I claim that `ki-` registers the advancement of a nominal heading a 3-arc to 2, when the nominal does not head a 1-arc. (I will present a more formal analysis below.) (29b) is illustrated below in (31).

(31)



Benefactive-2 Advancement

Plunkett and McKeever (1986) argued that not only is there 3-2 advancement in Sioux, but advancements of obliques to 2 as well. They did not specify, but the examples they give illustrate Benefactive-2 advancement, as in the following data:

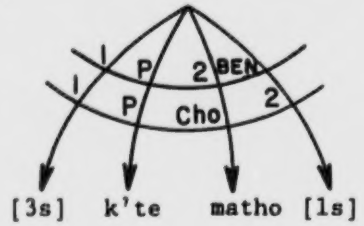
(32) Matho-g he m-iči-kte.
bear-Def Dem 1sO-Ben-kill
He killed the bear for me.

(33) =(W 1984:81)
John wowapi ki ni-čiči-yawa-hą he?
paper Def 2O-Ben-read-Dur QM
Is John reading the letter for you?

(34) =(B 1939:49)
ųk-o-kiči-le-pi.
1p-?-Ben-seek-Pl
He seeks it for us.

In these clauses the verb agrees with the Beneficiary, and the morpheme `kiči-` is affixed to the verb. This affix in the literature has been called the Benefactive marker (Van Valin 1977a:18, Williamson 1984:36). I claim that just like `ki-` registers 3-2 advancement, `kiči-` registers Benefactive-2 advancement, when the Advancee does not head a 1-arc. (I will present a more formal analysis below.) Similarly to 3-2 advancement, Benefactive-2 advancement is obligatory. (32) is illustrated with the following diagram:

(35)



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[10] The verb `k'u` *to give* never takes the morpheme `ki-`.

Source-2 Advancement

Source to 2 is another obligatory advancement. Like 3-2 advancement, Source-2 is registered with the affix `ki-`. Consider the following examples:

(36) Thaspą n-ithawa i-ma-ki-ču.
apple 2O-belong Loc-1sO-Adv-take
He took your apple from me.

(37) Hąpa n-ithawa ma-ki-yušdoka-pi.
shoe 2O-belong 1sO-Adv-remove-Pl
They took your shoes off me.

In both of these examples the nominal that is semantically a Source is triggering person agreement on the verb. Because the affix `ki-` may register the advancement of 3-2 or of Source-2, the rule for `ki-` must be stated such that it includes this kind of advancement.

Alternatively, one might claim that a Source advances to 3 and then the 3 advances to 2. Under this analysis, `ki-` simply registers 3-2 advancement.

Locative-2 Advancement

Sioux optionally advances animate Locatives to 2. Unlike the advancements discussed above, Locative-2 advancement is not registered with a verbal affix. Consider the following examples which demonstrate this advancement:

(38) =(W 1984:172)

a. *(m-)ilazata m-igl-ušna.
(1sO-)behind 1sO-Rfl-drop
I dropped it behind myself.

b. *John wowapi ki isakib ič'i-gnake.
paper Def beside Rfl-keep
John keeps the letter beside himself.

(39) a. =(B 1939:22)
M-isakib ahiųpe.
1sO-beside place
She placed it beside me.

b. Thapa ki m-iȟayata bd-ušna.
ball Def 1sO-behind 1sN-drop
I dropped the ball behind myself.

(38) and (39) demonstrate that when the postposition is used, the verb cannot show agreement with the Locative nominal, nor can reflexive morphology be triggered. This is also seen in the following examples:

(40) =(W 1984:168)

a. šųka ki el čhą wą a-wa-pazo.
dog Def Loc stick Indf Loc-1sN-show
I pointed the stick at the dog.

b. čhą wą a-m-ik-pazo.
stick Indf Loc-1sO-Rfl-show
I pointed the stick at myself.

(41) =(W 1984:168)

a. John el islaye ȟųȟ i-wa-ų-kte.
Loc ointment some Loc-1sN-use-Pot
I will rub some ointment on John.

b. John islaye ȟųȟ i-wa-ų-kte.
ointment some Loc-1sN-use-Pot
I will rub some ointment on John.

c. John islaye ȟųȟ i-ič'i-yų-kte.
ointment some Loc-Rfl-use-Pot
John$_i$ *will rub some ointment on himself*$_i$*/*him*$_j$.

In (41a) the Locative nominal has not advanced, but in (41b-c) it has. In (40a) and (41a) the Locative nominal is followed by a postposition. (A postposition also appears in the ungrammatical examples in (38).) In (40b) and (41b-c) the verb shows agreement with the Locative nominal. The nominals that are followed by a postposition cannot determine person agreement and the reflexive morpheme, as seen in (38) and (39). An advancement analysis not only accounts for this nominal triggering person agreement, but it also accounts for the absence of the postposition when it does trigger agreement; it can no longer be flagged as a Locative. Notice also, that in (41) the advancement of the Locative to 2 is optional.

Directional-2 Advancement

There are four basic verbs of motion in Sioux which may subcategorize for Directionals. Directionals in Sioux are marked with a postposition. When the nominal is animate there is obligatory advancement to 2, although the postposition is retained. Examine the following examples.

(42) =(V 1977a:20, 21)

a. Wa-i.
1sN-have.gone
I went (arrived there).

b. El wa-i.
Loc 1sN-have.gone
I went to him.

c. Thipi el wa-i.
house Loc 1sN-have.gone
I went to the house.

d. El čhi-i.
Loc 1sN:2O-have.gone
I went to you.

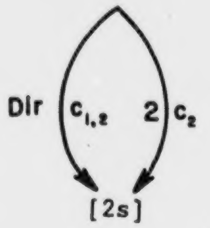
(43) =(V 1977a:20, 21)

a. El ma-hi
Loc 1sO-arrive
He came to me.

b. *Ma-hi.
1sO-arrive
(He came to me.)

In each of the above examples, any Directional nominal is flagged by the postposition `el`. It cannot be omitted, as (43b) demonstrates. Also, the animate nominal must advance to 2, thereby triggering person agreement. This construction is very similar to English pseudo-passives. Following Postal's (1986:203-41) analysis of these in Arc Pair Grammar, I claim that this construction in Sioux is a copy advancement to 2. Since the nominal is a final Directional the postposition is obligatory, and since it is a final 2 Pro-Drop is allowed. (I will discuss Pro-Drop in detail below.) This is illustrated with the following incomplete stratal diagram.

(44)



"Oblique"-2 Advancement

Consider now the Dakota construction in which a restricted set of verbs appear. These verbs are called "double patient" verbs by Williamson (1979:359), and stative verbs with two objects by Boas and Deloria (1941:76-7). The following examples demonstrate this "double patient" agreement:

(45) =(W 1979:360)

a. Iye-wičha-ma-čeča.
?-3p-1sO-resemble
I resemble them.
*(They resemble me.)

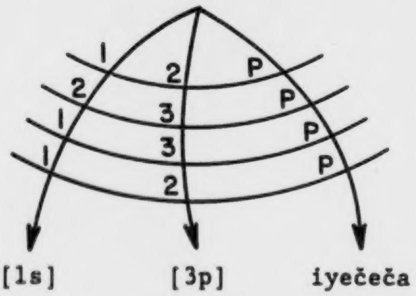
b. Iye-ma-čeča-pi.
?-1sO-resemble-Pl
They resemble me.
*(I resemble them.)

Notice in (45a) that both the first person singular objective marker and the third person animate plural marker are used. According to rules (25) and (26) ma- and wičha- are only used with 2s (which are final terms) and final 2s, respectively. Williamson (1979) argued that the initial stratum of these clauses contains a 2-arc and an "oblique"-arc, but no 1-arc. Unaccusative advancement accounts for the final 1 and "oblique"-2 advancement accounts for the final 2. This advancement to 2, like 3-2 advancement and some of the others, is obligatory, and is illustrated in the following diagram of sentence (45a).[11]

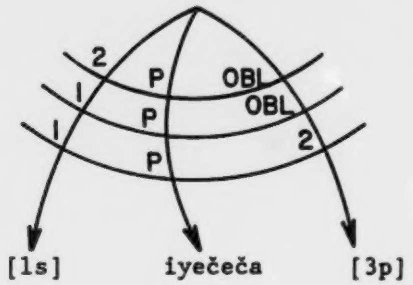
---

[11] An alternative analyis not considered by Williamson (1979) would be to posit an initially transitive stratum, Antipassive, 2-3 Retreat, and 3-2 advancement, as shown below. All of the known facts are accounted for except the lack of the prefix ki-, perhaps. (This was suggested by Steve Marlett, p.c.)

(ii)



(46)



2.2.2. Arguments for Advancement to 2 and Generalizations

Plunkett and McKeever (1986) give evidence that there are advancements to 2 in Lakhota. They argue that this analysis allows their generalizations for verb agreement to be maintained, namely, that working 2s determine objective person agreement. Likewise, the generalizations of the person agreement rule (26) can be maintained, specifically, that the verb agrees with final nuclear terms and nominals heading a 2-arc determine objective person ageement. Compare the following examples which they provide:

(47) =(P&M 1986:100)

a. *He ma-ni-ki-pazo.
s/he 1sO-2O-Dat-show
(He showed you to me.)

b. He niye ma-ki-pazo.
s/he you 1sO-Dat-show
He showed you to me.

In (47b) the verb is showing agreement with the first person singular nominal, which is the initial 3, *not* the second person singular nominal, which is the initial 2. In fact, (47a) demonstrates that the verb cannot show agreement with both nominals. If the 3 advances to 2, putting the 2 en chomage, the verb should not agree with the Patient; and given rule (26), it does not.

Notice also in (47b) that the second person singular nominal must be expressed with a pronoun. Yet it is well documented that Sioux is a Pro-Drop language. [12] I propose that the rule for Pro-Drop is that personal pronouns that are final nuclear terms may be omitted. This would account for the obligatory presence of the personal pronoun that is a 2-chomeur. Examples (48a)-(48d) illustrate that a third person 2-chomeur is overt only if the referent is human. There is no overt pronoun (hence it cannot be dropped) for non-humans.

(48) a. Iye čhi-či-pazo.
s/he 1sN:2O-Dat-show
I showed him to you.
**(I showed it to you.)*

b. (šųka-g he) wa-ki-pazo.
(dog-Def Dem) 1sN-Dat-show
I showed it/(the dog) to him.

c. Ma-ya-ki-pazo.
1sO-2N-Dat-show
You showed it to me.

---

[12] Williamson (1984:73) says that "every personal pronoun in a position that is associated with an AGR marker may drop in Lakhota."

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d. čhi-či-pazo.
1sN:2O-Dat-show
I showed it to you.
**(I showed her to you.)*

The advancement analysis accounts for all the different non-terms triggering person agreement, since they advance to 2. Thus, rule (26) needs no revision. The verb agrees with final nuclear terms.

Plural agreement presents another argument for the advancement analysis. The Plural Agreement Rule (25) states that only final nuclear terms trigger the plural suffix -pi. Therefore a nominal that advances to 2 should trigger plural agreement, which it does, as (49) and (50) demonstrate.

(49) šųka wą ų-ki-pazo-b.
dog Indf 1p-Dat-show-Pl
He showed a dog to us.

(50) =(B 1939:49)
ųk-o-kiči-le-pi.
1p-?-Ben-seek-Pl
He seeks it for us.

Thus the plural agreement rule pertaining to -pi, (25c), needs no revision under the advancement analysis.

The animate third person plural agreement wičha- presents another argument for the advancement analysis. Rule (25b) states that wičha- shows agreement with final 2s. If an Advancee to 2 is animate third person plural, and is not a final 1, then according to (25b) it should trigger the affixation of wičha-, which it does, as seen in the following examples:

(51) Wiyaka-g hena wičha-wa-k'u.
feather-Def those 3p-1sN-give
I gave the feathers to them.

(52) =(B 1939:49)
O-wičha-kiči-le.
?-3p-Ben-seek
He seeks it for them.

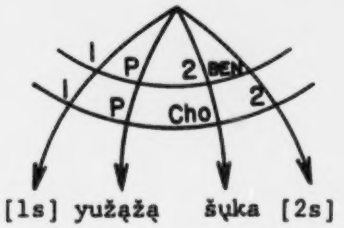
(53) =(W 1979:360)
Iye-wičha-ma-čeča.
?-3p-1sO-resemble
I resemble them.

But now consider the following examples where wičha- is showing agreement with a nominal that is not a final 2.

(54) =(W 1984:81)
Wičaša eya šųkala ki wičha-ma-ki-pazo-pi.
man some puppy Def 3p-1sO-Dat-show-Pl
Some men showed the puppies to me.

(55) a. =(W 1984:81)
šųka ki wičha-čhi-čiči-yužąžą-kte.
dog the 3p-1sN:2O-Ben-wash-Pot
I will wash the dogs for you.

b.



In (54) and (55) the verb shows agreement with both the initial 2 and Advancee. Also, the morpheme ki- is present in (54) and kiči- is present in (55a). Both register advancement. If the Advancee is a final 2, wičha- must be signalling agreement with the 2-chomeur. Therefore, the generalization for wičha- should include final 2s and 2-chomeurs. The notion of Acting 2 is useful for this generalization. Informally, an Acting 2 is any final 2 or 2-chomeur. The plural agreement rule after this modification is as follows:

(56) *Plural Agreement Rule (final version):*
a. If a subject is inanimate plural, then perform verb reduplication.
b. If an acting direct object is animate third person plural, then affix wiçha-.
c. If a final nuclear term is animate plural, then affix -pi, except when trigger is first person dual subject.
(b) is disjunctively ordered with respect to (c).

Another argument for the advancement analysis comes from the omission of the Locative postposition when the Locative nominal triggers verb agreement. A nominal that is an initial Locative may advance to 2. When it does advance, the nominal determines agreement on the verb and the postposition is omitted. This advancement is unlike the copy advancement of Directionals. Since the advanced nominal is not a final Locative, the postposition must be omitted, as seen above in (38)-(41).

Reflexivization presents one more argument for the advancement analysis. Now consider reflexives again.

(57) =(V 1977a:30)
He-m-ič'i-ye.
?-1sO-Rfl-say
I said that to myself.

(58) =(V 1977a:30)
O-n-ič'i-lote.
Loc-2O-Rfl-borrow
You borrowed it for yourself.
**(You borrowed yourself.)*

(59) Ağuyapi skuya wą m-ič'i-čağa.
bread sweet Indf 1sO-Rfl-make
I made a cake for myself.

In (57) the verb shows agreement with the initial 3. The advancement analysis claims that the 3 advances to 2, thereby allowing coreference between the initial 1 and 3 to follow the same pattern as coreference between the initial 1 and 2. This would be true for Benefactive-2 and Locative-2 advancements also, as seen in (58)-(59) and in (38)-(41). Thus the generalization about reflexivization would be the same for the clauses in (57)-(59) and (38)-(41) as it would for simple transitive clauses: ič'i- occurs if and only if there is multiattachment of a 1 and a 2.[13]

---

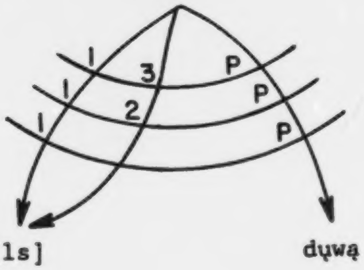
[13] Williamson (1979) argued that the antecedent of reflexives in Sioux is obligatorily a subject.

The generalizations about the affixes `ki-` and `kiči-` can now be made. The formulation of these rules accounts for the omission of `ki-` and `kiči-` when there is 1-2 multiattachment. Thus, the reflexive morpheme `ič'i-` is affixed in (60b), and not `ki-` or `kiči-`.

(60) a. `Ma-ya-ki-dųwą-s'a.`
`1sO-2N-Dat-sing-Hab`
You used to sing to me.

b. `M-ič'i-dųwą-s'a.`
`1sO-Rfl-sing-Hab`
I sing to myself.

c.



Informally `ki-` is affixed to the verb (except the verb `k'u` *to give*) when a nominal heading a 3-arc has advanced to 2: [14]

(61) `Ki-` *Morphology:*
If a nominal heads a 3-arc in c_i and a 2-arc in c_j, where j > i and there is no c_{j+1}, then affix `ki-` to the verb.

Informally, `kiči-` is affixed to the verb when a nominal heading a Ben-arc has advanced to 2:

(62) `Kiči-` *Morphology:*
If a nominal heads a Ben-arc in c_i and a 2-arc in c_j, where j > i and there is no c_{j+1}, then affix `kiči-` to the verb.

I have considered six arguments for the advancement analysis in this section. The advancement analysis allows for succinct verb agreement rules and the reflexivization rule. It also allows for a generalization for Pro-Drop in Sioux and the lack of postpositions with most advanced nominals, but the presence of the Directional postposition.

2.2.3. Alternative Analyses

One possible alternative to the advancement analysis is one in which the nominal in question does not advance to 2, but is both an initial and a final non-nuclear term or oblique. This analysis requires revisions to both the person and number agreement rules, as well as alternative analyses to Pro-Drop, Reflexivization, and other constructions.

Consider first what changes the person agreement rule (26) would require under this analysis. Rule (26) states that the verb agrees with final nuclear terms, and nominals heading a 2-arc determine objective person agreement. This would have to be broadened to allow for 3s, Benefactives, Locatives, Directionals and others discussed above to determine person agreement. It would be necessary to specify that when one of these nominals determines person agreement, the nominal heading the 2-arc cannot. It would also be necessary to say that these nominals are working objects and obliques because the objective person agreement is used in reflexive constructions.

---

[14] This rule assumes that there is no Source-2 advancement, but rather two advancements: Source-3 and then 3-2 registered by `ki-`.

The rule for reflexives under an analysis that does not allow advancement to 2 would say that any object or oblique nominal can be the target of reflexives.

The plural agreement rule (25) would have to be modified under this analysis. First it would have to say that plural animate final terms and obliques trigger the affix `-pi`. The plural agreement rule for `wičha-` would also have to state that animate third person plural final objects and obliques trigger the affixation of `wičha-`. Furthermore, the Pro-Drop rule for objects would have to stipulate that final 2s can be omitted only if there is no final 3 or oblique determining verb agreement. The rule would have to be stated as Williamson (1984) does, namely the nominal determining verb agreement may drop, regardless of its grammatical relation.

An analysis that does not allow advancement to 2 would have difficulty generalizing why some obliques always determine verb agreement (i.e. Benefactives), why others optionally determine verb agreement and when they do the postposition is omitted (i.e. Locatives), and why still others determine verb agreement but do not omit the postposition (i.e. Directionals). The complications caused by an analysis that does not posit advancements to 2 are sufficient to make one question its appropriateness.

Another alternative analysis to the advancement to 2 analysis would be one in which there is a direct mapping to 2. This kind of analysis would not require any changes to rules such as Reflexivization, Pro-Drop, and the person agreement rule (26). This analysis would allow the person agreement rule (26) to retain its generalizations. And for the most part, it would not require any changes to the plural agreement rule (56), except for the rule pertaining to `wičha-`.

An analysis which maps directly to 2 would have difficulty explaining why the Patient triggers `wičha-` even when the Recipient, Beneficiary, Locative, or whatever has been mapped to 2, as seen in the following example:

(63) =(W 1984:81)
`Wičaša eya  šųkala ki  wičha-ma-ki-pazo-pi.`
`man    some puppy  Def 3p-1sO-Dat-show-Pl`
Some men showed the puppies to me.

The Patient in the above example is a clausal constituent of some kind. Under a direct mapping to 2 analysis this nominal would have a grammatical relation that would have to trigger `wičha-` but not the other plural agreement, nor person agreement.

The Directional obliques present another problem for this type of analysis. If the Directional is mapped directly to 2, then it should not require the Directional postposition, but it does.

The advancement to direct object analysis is superior to analyses of either type (i.e. no advancement to 2 analysis, or direct mapping to 2 analysis) in that it allows the agreement rules to retain their generalizations. It allows for a straightforward reflexivization rule. And it accounts for the verb showing agreement with initial 3s, Benefactive, and other obliques.

3. Possessors and Possessor Ascension

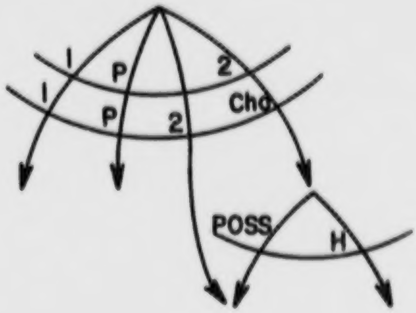
3.1. Introduction

The goal of this section is to present evidence for Possessor Ascension in Dakota Sioux. In this construction, a nominal which is semantically a possessor is syntactically not a surface constituent of the noun phrase, but rather a constituent of the clause. I first discuss two constructions known as Possessor Ascension (PA) within the framework of Relational Grammar and give an introduction to the ways possession is expressed in Sioux. Next I present the analysis of the two PA constructions. Then I present three arguments for these constructions in Sioux. And lastly, I argue against alternative analyses for these constructions.

3.1.1. Possessor Ascension Cross Linguistically

Two types of PA have been proposed in the literature. In the first type of PA, as shown in (64), the possessor ascends to take on the grammatical relation of the NP from which it comes (the host).

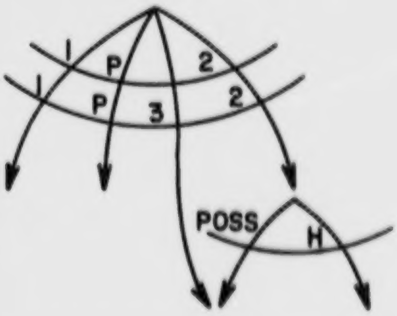
(64)



This type of PA has been posited for Blackfoot (Frantz 1979), Kinyarwanda (Bickford 1986), Kera (Camburn 1984), and Southern Tiwa (Allen, Frantz, Gardiner, and Perlmutter, 1990).

In the second type of PA, shown in (65), the possessor ascends to take on the grammatical relation of indirect object.

(65)



This type of PA has been argued for in Blackfoot (Frantz 1979), Choctaw (Davies 1986), Tzotzil (Aissen 1987), Kera (Camburn 1984), and Kinyarwanda (Bickford 1986).

What happens to the possessor in the NP after ascension is a language particular phenomenon. In some languages a pronominal copy occurs in the NP. In others, no copy occurs.

The second type of PA (cf. (65)) is anomalous because it violates the Relational Succession Law, which says:

(66) An ascendee assumes the grammatical relation of the host out of which it ascends.

In spite of this, the RG analysis of the second type of PA seems to be necessary for languages like Sioux.

3.1.2. Possession in Dakota

In this section I discuss the different ways in which Dakota expresses possession. There are four primary ways it accomplishes this: 1) using a relative clause, 2) using morphology on the possessed noun, 3) using morphology on the verb (both types of PA), and 4) coreference with the subject. The first method has sometimes been analyzed as a possessive pronoun. The second and third methods are related. I will discuss their relationship in section 3.2.3. The fourth method has been discussed in the literature, but I will apply an RG analysis to it. In this section I only present the facts of the language.

It has been argued that Sioux has no category Adjective (Van Valin 1977a). The relevant predicates are stative verbs, and they appear as main verbs as well as in relative clauses. This is illustrated by (67)-(68).

(67) Wičaša mani hąska-pi.
man walk tall-Pl
The men who are walking are tall.
The walking men are tall.

(68) Wičaša hąska mani-pi.
man tall walk-Pl
The men who are tall are walking.
The tall men are walking.

Similarly, Williamson (1979:359) argues that thawa in (69)-(70) is a verb, despite the earlier claim (Riggs 1893:16 and Buechel 1939:22) that it is a possessive pronoun.

(69) šųka m-ithawa kute-pi.[15]
dog 1sO-belong shoot-Pl
They shot my dog.
Lit. *They shot the dog that belongs to me.*

(70) šųka n-ithawa wa-kute.
dog 2O-belong 1sN-shoot
I shot your dog.
Lit. *I shot the dog that belongs to you.*

As a verb, it can also occur as the predicate of simple sentences, as shown in (71).[16]

(71) =(W 1979:359)
Ni-m-ithawa.
2O-1sO-belong.
You belong to me.

The second method of expressing possession in Dakota is by means of person prefix on the noun itself. This construction is used with kinship terms and body parts, but not with alienable possessions (i.e. common nouns), cf. (72)-(76).

(72) Mi-ate ki kų.
1s-father Def old
My father is old.

---

[15] The stem of the verb *belong (to)* for 1st and 2nd person is ithawa (Riggs 1893:16, Buechel 1939:22).

Underlying		*Surface*	
ma+ithawa	->	mithawa	*it belongs to me*
ni+ithawa	->	nithawa	*it belongs to you*
ųk+ithawa	->	ųkithawa	*it belongs to us*

The stem for third person lacks the i: thawa *it belongs to him*.

[16] This sentence is analyzed by Williamson (1979) like the "double patient" verbs in section 2.

(73) Mi-siha šiča-mna.
1s-feet bad-smell
My feet stink.

(74) *ni-šųka
2O-dog
(your dog)

(75) Ni-thąkši a-wa-pha.
2-sister Loc-1sN-hit
I hit your younger sister.

(76) Thąkši m-ithawa a-ya-pha.
sister 1sO-belong Loc-2N-hit
You hit my younger sister.

According to Boas and Deloria (1941:129-31) kinship terms could not occur with the verb `thawa` to express possession, but obligatorily had the person prefix on them. This is shown in (75). However, examples like (76) are now attested. This may be an historical or dialectal variation.

The third common way used in Dakota to express possession is via person agreement on the verb. Consider (77) and (78).

(77) Nape ma-yaza.
hand 1sO-hurt
My hand hurts.

(78) Hąpa ma-ki-yušdoka-pi.
shoe 1sO-Dat-remove-Pl
They took my shoes off.

In both of these clauses, the possessor is not expressed in the NP, rather on the verb. But there are differences between them also. The object in (77) is a body part noun (i.e. inalienable) and in (78), a common noun (i.e. alienable). In (78) the dative morpheme `ki-` occurs but in (77) it doesn't. I will discuss these differences below.

Both Riggs (1893:22, 63) and Buechel (1939:217-8) mention these types of constructions. They each state with regard to the construction represented by (78) that the verb takes two accusatives or objects: the possessor and the body part.

Boas and Deloria (1941:128-9, 132) also state that possession is commonly expressed on the verb. This is true with both types of PA in Sioux. They give the following examples:

(79) =(B&D 1941:129)
Si ma-ka-hų.
foot 1sO-Ins-slash
He slashed my foot.

(80) =(B&D 1941:132)
Woyuha ma-ma-ki-nų.
property ?-1sO-Dat-steal
He stole my property.

The fourth common way to indicate possession in Dakota is by means of the reflexive possessor prefix `ki-` (or one of its allomorphs `gd-`/`gl-` or `k-`).[17] This construction has been called *Middle Voice* by Van Valin (1977a) and *Possessor Reflexive* by Williamson (1984), and it has been well documented in the literature (Buechel 1939 and Boas and Deloria 1941). This is illustrated in (81).

---

[17] This is a different morpheme than the dative marker `ki-`, as both Van Valin (1977a) and Williamson (1984) argue. The argument is primarily based on the fact that the dative marker has different allomorphs.

(81) =(W 1984:160)
Wiyatke ki o-wa-gl-ušpe.
cup Def Loc-1sN-PRfl-hold
I held (onto) my cup.

The ways that possession is expressed in Sioux can be summarized with the following table. Relative clauses are used with all three types of nouns. Prefixation on the noun is not used with common nouns. The two types of PA are not used with kinship terms. And the Possessor Reflexive construction is used only with common nouns.

Table 4. Ways to Express Possession

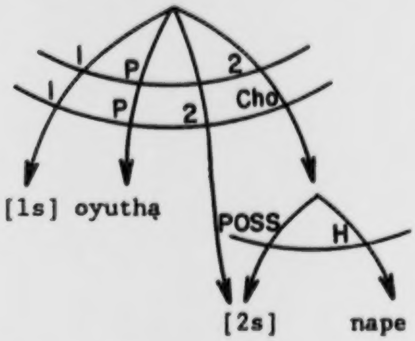
	Rel. Cl.	Prefix	PA w/o ki-	PA w/ ki-	PRfl
Inalienable	X	X	X	-	-[18]
Kinship	X	X	-	-	-
Alienable	X	-	-	X	X

3.1.3. Analysis of Both Types of Possessor Ascension

Cross-linguistically there are two types of PA attested, as mentioned above, and Sioux uses both types. The first type of PA in Sioux occurs only with body parts. The possessor ascends to 2 from an initial 2 host, putting the initial 2 en chomage. The possessor, as a final 2, triggers objective person agreement on the verb. (82) demonstrates this type of PA in a transitive clause.

(82) a. Nape o-čhi-yuthą
hand Loc-1sN:2O-touch
I touched your hand.

b.



Examples (83) and (84) show that the possessed noun must be a body part for this type of PA.

(83) šųka o-čhi-yutha.
dog Loc-1sN:2O-touch
**I touched your dog.*
Dog, I touched you.

(84) Thąkši ǧu-ma-ya-ya
sister burn-1sO-2N-Caus
**You burned my sister.*
Sister, you burned me.

When this construction is formulated with something other than body parts it means either something other than possession, or it is ungrammatical.

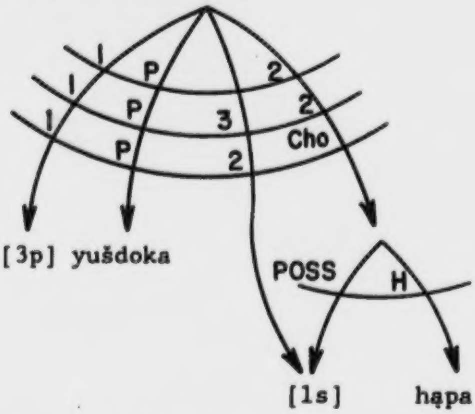
---

[18] Williamson (1984:159-60) claims that this construction is used with inalienable objects. My language consultants were unable to verify her data.

The second type of PA in Sioux occurs only with common nouns. The possessor ascends to 3 from an initial 2 host, then 3-2 advancement occurs, putting the initial 2 en chomage. The advancement is registered by the morpheme `ki-`, and the possessor triggers objective person agreement. This is represented in (85) with a transitive clause and stratal diagram.

(85) a. Hąpa ma-ki-yušdoka-pi.
shoe 1s-Dat-remove-Pl
They took my shoes off.

b.



As discussed in section 3.1.2, (86) contains a noun followed by a relative clause.

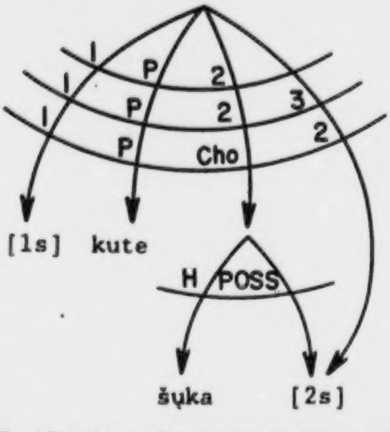
(86) šųka n-ithawa wa-kute.
dog 2O-belong 1sN-shoot
I shot your dog.

But now consider (87b).

(87) a. šųka čhi-či-kute
dog 1sN:2O-Dat-shoot
I shot your dog.

b. *Ni-šųka wa-kute.
2O-dog 1sN-shoot
(I shot your dog.)

c.



Van Valin (1977a:45) claims that common nouns never take the person prefixes as body part nouns do. In fact, the only types of possessive constructions in which common nouns can be used are either PA or relative clauses. This can be accounted for by claiming that PA is obligatory with possessors of common nouns. The PA facts described here look very much like those described by Judith Aissen for Tzotzil (Aissen 1987), a language which does not allow final 3s.

Consider now the host of ascensions in Sioux. Perlmutter and Postal (1983a:53) proposed the Host Limitation Law (HLL):

(88) Only nominals bearing a term relation can serve as host of ascensions.

Dakota follows this law by only allowing Possessor Ascension from an initial 2 for both types of PA. In (89) and (90) it can be seen that the host may be a 2 of a transitive clause.

(89) `Nape ba-ma-ya-ksa.`
`hand Ins-1sO-2N-separate`
You cut off my hand.

(90) `šųka ma-ki-kute.`
`dog 1sO-Dat-shoot`
He shot my dog.

In (91) and (92) it can be seen that the host cannot be the 1 of a transitive clause.

(91) `Nape o-ma-ya-yuta.`
`hand Loc-1sO-2N-touch`
**Your hand touched me.*
You touched my hand.

(92) `šųka wa-ki-kte.`
`dog 1sN-Dat-kill`
**My dog killed him.*
I killed his dog.

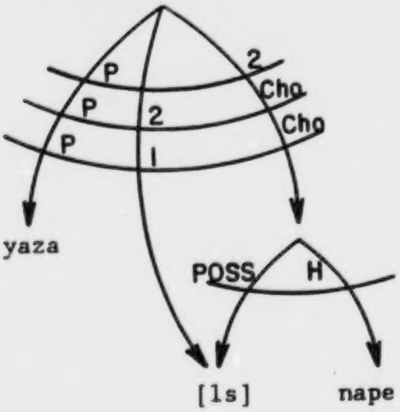
But the host can be the argument of an unaccusative verb. (93)-(94) show PA with body part nouns, and (95)-(96) show PA with common nouns.

(93) a. `šiča-ma-mna.`
`bad-1sO-smell`
I stink.

b. `Siha šiča-ma-mna`
`foot bad-1sO-smell`
My feet stink.

(94) a. `Nape ma-yaza.`
`hand 1sO-hurt`
My hand hurts.

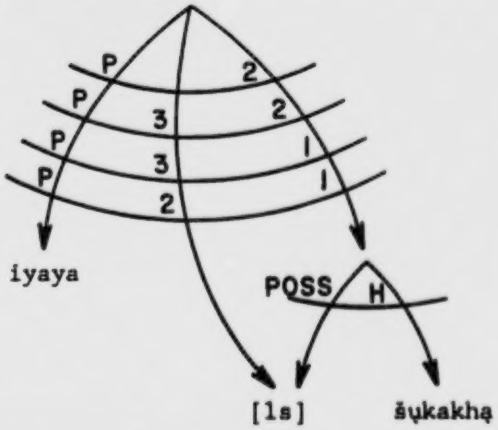
b.



(95) =(B&D 1941:128)
šųkakhą wą ki-t'e.
horse a Dat-die
His horse died.

(96) a. =(B&D 1941:132)
šųkakhą i-ma-ki-yaya-pi.
horse Loc-1sO-Dat-have.gone-Pl
My horses have gone.

b.



In (96) the plural suffix shows that *horses* is a final 1, and the first person singular affix shows that the Possessor is a final 2.

The argument of initially unergative clauses cannot host either type of PA, as illustrated in (97)-(98).

(97) a. Wa-ni.
1sN-live
I am alive.

b. Natahu m-ithawa ni.
brain 1sO-belong live
My brain is alive.

c. *Natahu wa-ni.
brain 1sN-live
(My brain is alive.)

(98) a. Wa-psiča.
1sN-jump
I jumped.

b. šųka-g m-ithawa psiča.
dog-Def 1sO-belong jump
My dog jumped.

c. *šųka ma-ki-psiča
dog 1sO-Dat-jump
(My dog jumped.)

And (99) shows that possessors cannot ascend out of 2s that are initial 3s.

(99) a. šųka n-ithawa pežuta wa-k'u.
dog 2O-belong medicine 1sN-give
I fed medicine to your dog.

b. *šųka pežuta čhi-č'u.
dog medicine 1sN:2O-give
(I fed medicine to your dog.)

c. *šųka pežuta čhi-či-č'u.
dog medicine 1sN:2O-Dat-give
(I fed medicine to your dog.)

Nor can possessors ascend out of 2s that are initial Benefactives.

(100) a. Ptewanapi n-ithawa wičha-kiči-dųwą.
cattle 2O-belong 3p-Ben-sing
He sings for your cattle.

b. *Ptewanapi n-iči-dųwą.
cattle 2O-Ben-sing
(He sings for your cattle.)

(101) a. Nağı m-ithawa ų t'a.
soul 1sO-belong Ben die
He died for my soul.

b. Mi-nağı ų t'a.
1s-soul Ben die
He died for my soul.

c. *Mi-nağı kiči-t'a.
1s-soul Ben-die
(He died for my soul.)

d. *Nağı m-iči-t'a.
soul 1sO-Ben-die
(He died for my soul.)

Possessors cannot ascend out of 2s that are initial Locatives either.

(102) a. Mi-siha aką ɨyą bd-ušna.
1s-foot Loc stone 1sN-drop
I dropped a rock on my foot.

b. *Siha ɨyą m-igd-ušna.
foot stone 1sO-Rfl-drop
(I dropped a rock on my foot.'

(103) a. šųka m-ithawa aką ɨyą d-ušna.
dog 1sO-belong Loc stone 2N-drop
You dropped a rock on my dog.

b. *šųka ɨyą ma-ki-d-ušna.
dog stone 1sO-Dat-2N-drop
(You dropped a rock on my dog.)

In summary, the host of either type of PA must be the initial 2 of the clause. Possessors of body part nouns ascend to 2 under this condition. Possessors of common nouns obligatorily ascend to 3, then advance to 2.

These facts look very much like Kera (Camburn 1984), a language in Africa which also has both types of PA and in which the host is an initial 2. In Kera the possessor of body parts ascends to 2 and the possessor of kinship terms and alienable objects ascends to 3.

Kinyarwanda (Bickford 1986) is another language that has both types of PA, but unlike Sioux and Kera, the possessor of alienable nouns ascends to 2, and the possessor of inalienable nouns to 3.

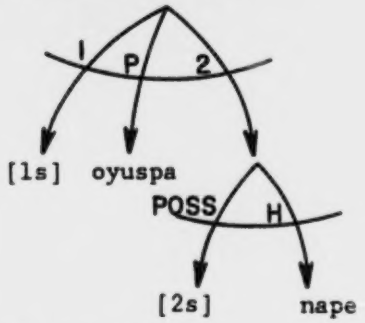
3.2. Arguments for Both Types of Possessor Ascension

3.2.1. Verb Agreement

Verb agreement presents the strongest argument for PA in Dakota. When the possessor is a final 2 it becomes the trigger for person and number agreement, instead of the initial 2. Consider the following:

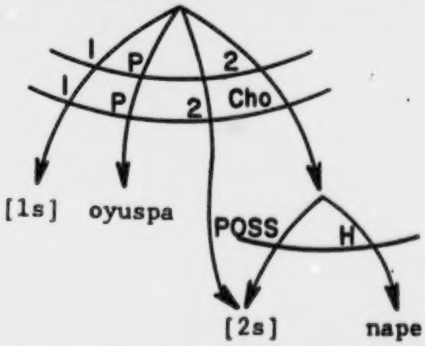
(104) a. `Ni-nape o-bd-uspa.`
`20-hand Loc-1sN-hold`
I'm holding your hand.

b.



(105) a. `Nape o-čhi-yuspa.`
`hand Loc-1sN:20-hold`
I'm holding your hand.

b.



In (104) the verb agrees with the first person singular subject. Since `nape` is third person, no agreement marker occurs. This is what rule (26) would predict. In (105), however, the verb agrees with a first person singular subject and a second person direct object. The PA analysis (105b) accounts for this since the second person singular possessor is a final direct object.

Now consider (106)-(107) which show that when the possessor ascends, it triggers plural agreement:

(106) `Siha ųk-yazą-b.`
`foot 1p-hurt-Pl`
Our feet hurt.

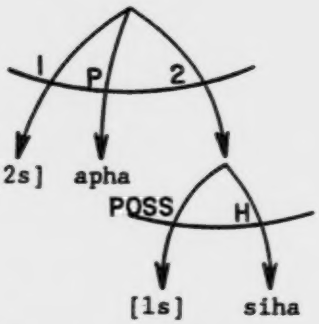
(107) `Nape we-ųk-yau-b.`
`hand ?-1p-bleed-Pl`
Our hands are bleeding.

3.2.2. Distribution of Possessive Morpheme

Another argument comes from the distribution of the possessive morpheme with PA. The use of the possessive morpheme on body part nouns and PA are mutually exclusive and they are related. These two constructions have similar initial strata, but different final strata. Consider (108) and (109):

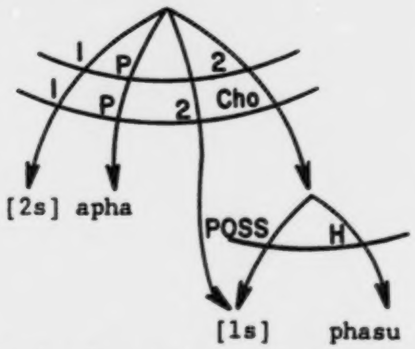
(108) a. `Mi-siha a-ya-pha.`
`1s-feet Loc-2N-hit`
You hit my feet.

b.



(109) a. Phasu a-ma-ya-pha.
nose Loc-1sO-2N-hit
You hit my nose.

b.



The possessor heads a Poss arc in the NP and the body part noun is the head of the NP that is the direct object. Thus, the construction represented in (108) has the same initial stratum that a PA construction has. But in the final stratum of (109), the possessor is a constituent of the clause.

3.2.3. Reflexivization

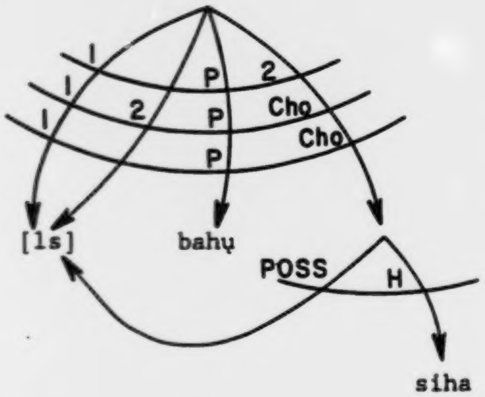
I argued in section 2 that only 1-2 multiattachment triggers reflexive morphology. When a subject and a possessor are multiattached, there are three different ways to express possession. In the first, shown in (110), multiattachment is not resolved so there are person prefixes on both the verb and the noun.

(110) Ni-sųka ba-ya-hų.
2O-brother Ins-2N-slash
You cut your younger brother.

In the second, shown in (111a), the possessor has ascended to 2, which results in a 1-2 multiattachment; this triggers reflexive morphology and the cancellation of the 2-arc.

(111) a. Siha ba-m-ič'i-hų.
foot Ins-1sO-Rfl-slash
I cut my foot.

b.



The normal reflexive construction is never used when the possessor of common nouns is coreferential with the subject; instead, the *Possessor Reflexive* construction is used. Examine the following examples:

(112) =(W 1984:158)
`Ogle wą wa-k-pabla-he.`
`shirt Indf 1sN-PRfl-iron-Dur`
I was ironing a shirt of mine.

(113) =(V 1977a:29)
`šųka ki gl-užaža.`
`dog Def PRfl-wash`
He washes his (own) dog.

Unlike the PA example with normal reflexivization (111) which is marked with objective person agreement, the subject in Possessor Reflexive examples determines nominative person agreement on the verb. The verb is also affixed with the Possessor Reflexive morpheme `ki-`. Notice that there is no morphology in the NP indicating the possessor. This is simply a construction that registers the coreference of the subject and the possessor of the object with the morpheme (PRfl) `ki-`.

This construction is different from the PA constructions in that the host does not have to be an initial 2. The following example shows that the host may be a Locative.

(114) =(W 1984:172)
`Oyųke ki el o-ki-gnake.`
`bed Def Loc ?-PRfl-put`
He put it on his bed.

Possessor Reflexives are important since Van Valin (1977a:68) claims that PA examples like (95) do not really contain a possessor at all. He says that "there is no possible possessor NP in the clause" as there are in examples like (112)-(113). In fact, there is a possessor in the clause, but it has ascended to 3, unlike the Possessor Reflexive clauses where there has been no ascension.

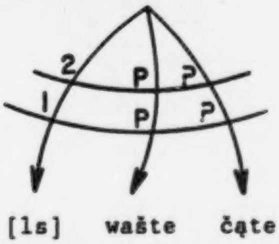
3.3. Alternative Analysis

A possible alternative to the PA analysis is to assume that the nominal in question does not ascend but is initially a clause level constituent. In the most straightforward cases, this means that the possessor of body part nouns heads an initial 2-arc, and the possessor of common nouns heads an initial 3-arc or Source-arc.

Under such an analysis, one must claim that in the construction without (Dat) `ki-`, the possessed body part is some sort of oblique or adjunct. Consider the following sentence with the analysis shown in (115b):

(115) a. `čąte ma-wašte.`
`heart 1sO-good`
My heart is good.

b.



One difficulty with this analysis is that it is unclear what grammatical relation the body part noun has to the clause. Under the PA analysis the body part noun heads a 2-arc initially and is a chomeur finally.

Another problem with this analysis is that it makes no claims about the construction with (dative) `ki-` and the possessor of common nouns. This construction could not be interpreted as those with body part nouns (i.e. "heartwise" as Williamson (1984) suggests), because the PA analysis says that the two types of constructions are similar, and that only the constraints on the type of noun and grammatical relation the possessor assumes are different.

An analysis along these lines was proposed by Van Valin (1977a). He said that in examples like (116) the Source is understood to be the possessor of the item.

(116) a. `Thaspą ma-čhi-či-nų.`
`apple   ?-1sN:2O-Dat-steal`
I stole your apple. or
I stole the apple from you.

b. =(V 1977a:16)
`O-wíčha-wa-ki-lote.`
`Loc-3p-1sN-Dat-borrow`
I borrowed it from them. or
I borrowed theirs.

But this analysis does not account for sentences like the following, where the possessor cannot be taken as a Source.

(117) `šųka ma-ki-kute.`
`dog  1sO-Dat-shoot`
He shot my dog.

(118) `Nape ma-yuza.`
`hand 1sO-hold`
Shake my hand!

Nor does it explain sentences like the following where the possessor might be a Source but the verb is not marked as if it were with the morpheme (Dat) `ki-`, as it was in (116).

(119) =(B 1939:217)
`Pha  kį  i-ni-ču-kte.`
`head Def ?-2O-take-Pot`
He will take your head.

The PA analysis has no difficulty with these constructions. They are all examples of PA.

Another analysis along these lines is one in which the understood possessor is a 3, called the Ethical Dative. Tuggy (1980) argued for this analysis in Spanish. This analysis assumes that the possessor has been either deleted or omitted and the 3 is understood to be the possessor. There are two problems with this analysis. The first is that the notion of Ethical Dative is not independently motivated in Sioux, unlike Spanish. The second and more important problem with this analysis is that it assumes that the Ethical Dative is a 3. This could be a valid assumption for possessors of common nouns, where (Dat) `ki-` occurs, but in constructions with body part nouns, as seen in (118) and (119), the absence of (Dat) `ki-` argues against the Ethical Dative analysis. The PA analysis accounts for both constructions: those with common nouns and the morpheme (Dat) `ki-`, and those with body part nouns and without (Dat) `ki-`.

4. Clause Union

4.1. Introduction

4.1.1. Universal Characterization of Clause Union

The topic of Clause Union has been of increasing interest in recent years. The framework of RG has made some significant claims concerning Clause Unions and language universals. Gibson and Raposo (1986) present what has been called the first descriptively correct work of synthesis (Davies and Rosen 1988:53). Their work was based on the traditional idea that Clause Union was the collapsing of two clauses into one.

Recently there has been a new proposal with regard to Clause Unions. Davies and Rosen (1988) presented evidence that Unions are not the collapsing of two clauses; rather they are *Multipredicate Clauses*. They showed that Gibson and Raposo's (1986) Inheritance Principle was unnecessary and that the rules of Clause Union fall out of the general rules of clause structure already in existence, with a slight modification to the notion of level. They did keep the idea that the embedded final 1 is the only nominal allowed to revalue.

Davies and Rosen's (1988) claim that a Union clause can have two or more successive predicates required them to fine-tune the terminology. They presented the notion of P-Sector. This notion will be employed in this article. It is as follows:

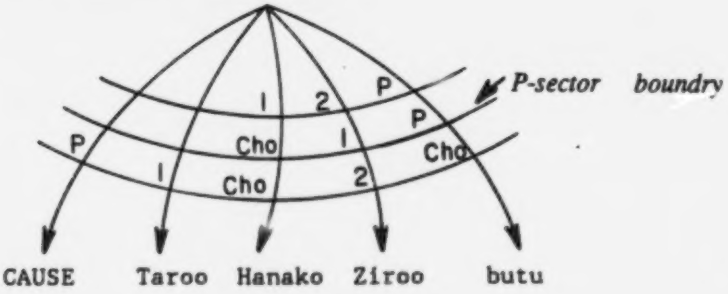
(120) Let *v* be a predicate that heads, in clause *b*, a P-arc starting in stratum *i* and ending in stratum *j*: an arc $[P(v,b) < c_i c_j >]$.
a. Its P-sector consists of all strata *k* from $k=i$ to $k=j$.
b. Its P-initial stratum is stratum *i*.
c. Its P-final stratum is stratum *j*.

This is illustrated in the following Japanese example taken from Suzuki 1984 that Davies and Rosen (1988:57) analyze.

(121) a.
```
Taroo ga  Ziroo o   Hanako ni(-yotte)
Taro  NOM Jiro  ACC Hanako by

but-are-sase-ta.
hit-PASS-Caus-PAST
```
Taro made Jiro be hit by Hanako.

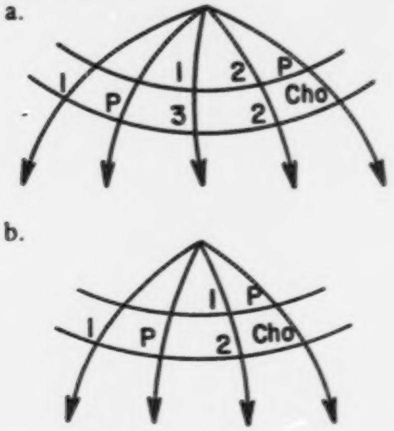
b.



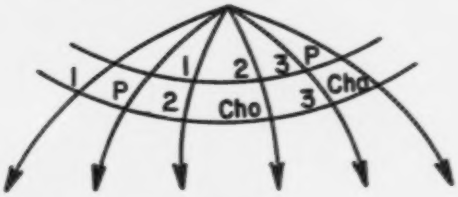
The inner verb, `butu`, has distinct P-initial and P-final strata. The union verb has one stratum that is both P-initial and P-final. For a more comprehensive introduction, one should consult Davies and Rosen (1988).

There have been three types of Causative Union, as relates to the grammatical relation that the embedded 1 assumes, attested in natural language. These are represented by French, Chamorro (Gibson and Raposo 1986), and Italian (Rosen 1983). The French pattern is what has been called the Ergative Analysis. This is when the P-final ergative revalues as a union P-initial 3, and the P-final absolutive revalues as a union P-initial 2. With the Chamorro pattern, any P-final 1 revalues to 2 in the union stratum. The third type of Causative Union has been called Chomeur Causee Unions (Rosen 1983). In this type of Union the P-final 1 does not revalue, but is put en chomage. Each of these is represented by the following stratal diagrams.

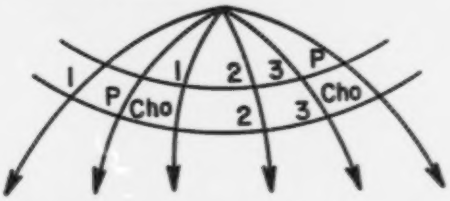
(122) French Pattern



(123) Chamorro Pattern



(124) Chomeur Causee Union



Every language has its own particular rules and thus may differ from these, but these are the three attested patterns. I will show that Sioux is most like the Chamorro Pattern and explain the language particular rules that make it unique.

4.1.2. Causative Clauses in Sioux

The literature has claimed that Sioux has two causative verbs, -ya and -khiya.[19] Consider the following examples.

(125) Šab-wa-ya.
black-1sN-Caus
I blacken it.

(126) Nųwą-ma-khiya-pi.
swim-1sO-Caus-Pl
They made me swim.

(127) Matho kį kte-ma-khiya.
bear Def kill-1sO-Caus
He made me kill the bear.

Van Valin (1977a:85) calls -ya and -khiya "causative auxiliaries" because they cannot stand alone and constitute a clause. Also concerning examples like the above, Van Valin (1977a:87) concludes that "verb plus causative constructions in Lakhota can best be analyzed as compound verbal complexes rather than as independent complement plus verb."

Williamson (1984:125) states that these verbs are unique in the constructions they are used in. That is, they differ from other verbs with complement clauses. For example, complementizers are not allowed.

Boas and Deloria (1941:74) call these verbs "dependent verb stems" because they appear to be verbal suffixes but they presuppose a lower predicate.

In the following sections I will discuss this construction more thoroughly and present arguments that these verbs are different from the other verbs with complement clauses. I first present arguments based on phonological facts. Then I present arguments based on syntactic evidence. Because of the significant difference between the causative verbs -ya and -khiya and other verbs with complement clauses, I propose that they must occur in a Union structure. Then lastly, I present an analysis for Causative Union.

4.2. Arguments for Monoclausal Structure

Williamson (1984:111) states that Sioux roughly has two syntactic types of subcategorized complement clauses. There are those that have overt complementizers and those without.[20] The following are examples with complementizers.

(128) šųka-g he a-ya-pha-g he sdod-wa-ya.
dog-Def Dem Loc-2N-hit-Comp Dem know-1sN-Caus
I know that you hit the dog.

(129) =(V 1977a:92)
Ağuyapi ki i-ya-ču čha wą-bl-ake.
bread Def Loc-2N-take Comp Indf-1sN-see
I saw you take the bread.

(130) =(W 1984:116)
Tha-šųkawakhą manu-pi k'ų w-eksuye.
Poss-horse steal-Pl Comp 1sN-remember
I remember that his horse had been stolen.

Now consider the following examples that do not take the complementizers.

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[19] Boas and Deloria (1941:74) state that the semantic difference of these two verbs is volition. The verb -ya indicates an unintentional causation, while -khiya has more of an intentional meaning.

[20] There are three different complementizers in Sioux. Williamson (1984) discusses the semantic differences between them.

(131) Ya-psíča wa-čhí.
2N-jump 1sN-want
I want you to jump.

(132) Ya-nų́wą o-yá-kihi.
2N-swim ?-2N-able
You can swim.

(133) Paha o-ní-hįȟpaya w-éksuya.
hill Loc-2O-fell 1sN-remember
I remember that you fell down the hill.

(134) Maza kį katį-ya.
metal Def straight-Caus
He caused the iron to be straight. or
He straightened the iron.

(135) Nųwą́-ma-khiya-pi
swim-1sO-Caus-Pl
The made me swim.

The set without complementizers contain two syntactic types of clauses. There are those where each predicate takes its own person marking (131)-(133), and there are those where the predicates share person marking (134)-(135). It is for the latter that I argue for a monoclausal construction.

There are other syntactic differences between clauses containing complement clauses and the causative clauses. I will discuss these in section 4.2.2. In section 4.2.1., I present the phonological arguments for the single stem of the causative predicate and the complement predicate.

4.2.1. Phonological Arguments

Shaw's (1980) phonological analysis of Sioux is very comprehensive. She starts by giving Chambers' (1974) Dakota Accent Rule (DAR) and then proceeds to build on it. Stated informally, the DAR says that the second syllable of a multisyllable word or the solitary syllable of a monosyllabic word receives the stress. When this rule interacts with other rules such as A-Drop, Coalescence or Stem Formation, it explains the apparent exceptions to the DAR. The words in (136) are examples of the interaction of DAR and each of these rules in each case.

(136) =(S 1980:33,34)

	Underlying		*Surface*	
a.	tha-isto	->	thísto	A-Drop
b.	wa-yuta	->	wóta	Coalescence
c.	čhap	->	čhápa	Stem Formation

Now consider the stress pattern in the following examples:

(137) =(V 1977a:82)
M-ištíma í-bl-úthe.
1sO-sleep Loc-1sN-try
I tried to sleep.

(138) =(V 1977a:82)
Mary wowapi wą ophé-w-ečathų wa-čhį́.
book a ?-1sN-buy 1sN-want
I want to buy Mary a book.

It can be seen that both the embedded verb and the matrix verb take a primary stress. But in the causative clauses this is not true; although there are two predicates there is only one stress, as shown in (139)-(140).

(139) =(V 1977a:12)
Hiyápi ki pus-wá-ye.
clothes Def dry-1sN-Caus
I dry the clothes.

(140) =(B&D 1941:86)
A-má-phe-čhi-čhiya.
Loc-1sO-hit-1sN:2O-Caus
I make you hit me.

Therefore, we should view the two predicates in such clauses as constituting a single word. If the causative predicate is taken as an affix structurally, as in other languages, this fact is accounted for.

Stem Formation presents a second phonological argument for a monoclausal structure. The Stem Formation rule prevents underlying single syllable words from surfacing with a final consonant (by inserting a vowel). If a causative predicate is suffixed to a single syllable verb such as pus *dry* in (139), then Stem Formation should not apply, which is the case as can be seen. Based on phonological evidence, the causative predicate and the complement predicate constitute a single word.

4.2.2. Comparison with other Complement Clauses

Sioux has been claimed in the literature to allow free word order of the NPs and adverbials in a clause (Van Valin 1977a:28 and Williamson 1984:25). The constituents of embedded clauses do not scramble with matrix clause constituents, as seen in the following examples:

(141) a. =(W 1984:120)
Bill [wičaša ki kičiza-hą-pi čha] wąyąke.
[man Def fight-Dur-Pl Comp] see
Bill saw that the men were fighting.

b. =(W 1984:120)
[Wičaša ki kičiza-hą-pi čha] Bill wąyąke.
[man Def fight-Dur-Pl Comp] see
Bill saw that the men were fighting.

c. *Wičaša ki Bill kičiza-hą-pi čha wąyąke.
man Def fight-Dur-Pl Comp see
(Bill saw that the men were fighting.)

If causative clauses are superficially monoclausal, they should allow scrambling, and they do, as the following examples illustrate:

(142) a. John šičeča kį taku wą
children Def something Indf

ophe-kiči-thų-wičha-khiya.
?-Ben-buy-3p-Caus

John made the children buy something for him.

b. Taku wą John šičeča kį
something Indf children Def

ophe-kiči-thų-wičha-khiya.
?-Ben-buy-3p-Caus

John made the children to buy something for him.

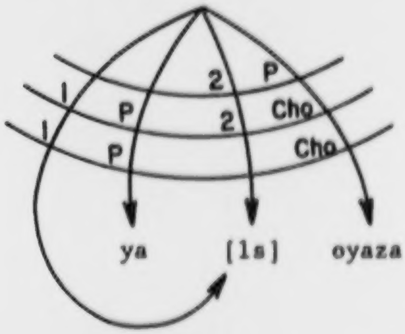
It can be seen in (142b) that *John*, the subject of the outer clause, may scramble with taku wą and šičeča kį, which are constituents of the inner clause.

Further evidence that causative clauses have a monoclausal structure comes from the fact that the constituents of the complement clause act like constituents of the causative clause by triggering verb agreement. Consider (143)-(144) which show the causative predicate agreeing with the subject of the complement clause:

(143) =(V 1977a:85)
Ophéthų-ma-khiye.
buy-1sO-Caus
He made me buy it.

(144) a. Oyaza-m-ič'i-ya.
hurt-1sO-Rfl-Caus
I caused myself to hurt. or
I hurt myself.

b.



It is evident from the objective person affix in (143)-(144) that the subject of the complement is the direct object of the causative clause. Also notice that in (144) the causative verb has reflexive morphology, indicating 1-2 multiattachment.

I propose, based on the evidence that causative clauses display a monoclausal structure, that they can best be explained with Davies and Rosen's (1988) multipredicate Union analysis. The inner verb is a chomeur in the Union stratum. All of the constituents of the inner clause are constituents of the matrix clause.

4.3. Analysis of Causative Union as Multipredicate Clauses

4.3.1. Dakota Inner P-final 1 Revaluation

Causative clauses under the multipredicate clause analysis follow the laws of universal grammar, which leaves details like verb agreement and the inner P-final 1 revaluation to be dealt with on a language specific basis.

Dakota is most like the Chamorro pattern of the inner P-final 1 revaluation; that is the inner P-final 1 revalues to 2 in the Union P-sector. This can be seen from the fact that the inner P-final 1 triggers objective person agreement on the causative verb. Consider the following:

(145) Nųwą-ma-khiya-pi.
swim-1sO-Caus-Pl
They made me swim.

(146) Matho kį kte-ma-khiya.
bear Def kill-1sO-Caus
He made me kill the bear.

Number agreement of the inner P-final 1 on the causative verb is another piece of evidence for the revaluation to 2. When the inner P-final 1 is animate third person plural, it should trigger `wicha-` on the causative verb, which it does, as seen in (147).

(147) `Ištima-wičha-wa-khiya.`
`sleep-3p-1sN-Caus`
I made them go to sleep.

Another argument that the inner P-final 1 revalues to 2 in the Union clause comes from the reflexivization facts. The reflexive construction is only used when there is 1-2 multiattachment. In a Union stratum, if the inner P-final 1 revalues to 2 and is coreferenced with the Union P-final 1, then reflexive morphology will be triggered. This can be seen in the following example:

(148) `ǧu-m-ič'i-ya.`
`be.burned-1sO-Rfl-Caus`
I burned myself.

The last argument for the revaluation of the inner P-final 1 to 2 comes from the fact that the morpheme registering 3-2 advancement, (Dat) `ki-`, does not appear; thus the 1 does not revalue to 3. This can be seen in (149)-(150), as well as the other examples following in this section:

(149) =(B&D 1941:86)
`A-ni-phe-wa-khiya.`
`Loc-2O-hit-1sN-Caus`
I made him hit you.

(150) `*A-ni-phe-wa-ki-khiya.`
`Loc-2O-hit-1sN-Dat-Caus`
(I made him hit you.)

The inner P-final 1 revaluation rule for Sioux is as follows:

(151) *Revaluation Rule:*
Given an inner P-final arc A with the coordinates $[1(a,b) < c_jc_i >]$ and a Union P-initial arc B with coordinates $[1(d,b) < c_{i+1}c_k >]$, then A must revalue to $[2(a,b) < c_{i+1}c_k >]$.

4.3.2 Verb Agreement

The verb agreement for the final stratum of the Union clause is the same as the rules given earlier. They are again presented here:

(152) *Person Agreement Rule:*
The verb agrees in person with final nuclear terms.
a. Nominals heading a 2-arc determine the objective agreement markers.
b. Nominals heading a 1-arc determine the nominative agreement markers.
(a) is disjunctively ordered with respect to (b).

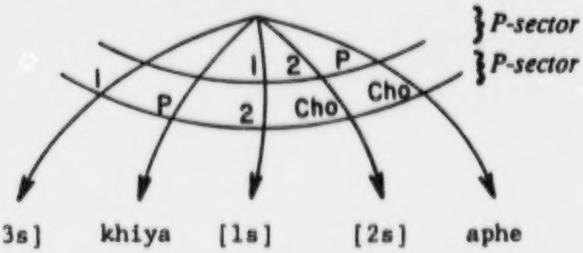
(153) *Plural Agreement Rule:*
a. If a subject is inanimate plural, then perform verb reduplication.
b. If an acting direct object is animate third person plural, then affix `wičha-`.
c. If a final nuclear term is animate plural, then affix `-pi`; except when trigger is first person dual subject.
(b) is disjunctively ordered with respect to (c).

These rules do not account for all the facts of causative clauses, as can be seen in (154):

(154) a. `A-wičha-pha-ma-khiya.`
`Loc-3p-hit-1sO-Caus`
He made me hit them.

b. =(V 1977a:153)
A-ni-phe-ma-khiye.
Loc-2O-hit-1sO-Caus
He made me hit you.

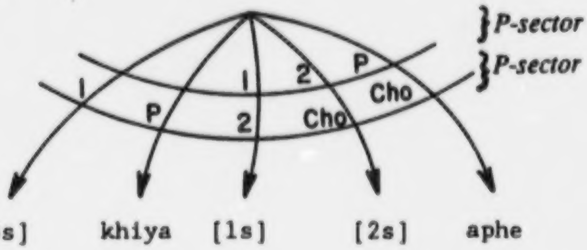
c.



Notice in (154) that the inner predicate is agreeing with the inner P-final 2. Rules (152) and (153) cannot account for this fact. Now consider the following example.

(155) a. =(V 1977a:153)
A-čhi-phe-ma-khiye.
Loc-1sN:2O-hit-1sO-Caus
He made me hit you.

b.



In (155) the inner predicate is agreeing not only with the inner P-final 2, but the inner P-final 1 also. Van Valin (1977a:85) claimed that the inner P-final 1 may agree with the inner predicate only when the causative verb -khiya is used, not when -ya is used. He gives the following examples:

(156) =(V 1977a:85)[21]

a. Kte-ma-ya-ye.
kill-1sO-2N-Caus
You caused me to kill it.

b. *Wa-kte-ma-ya-ye.
1sN-kill-1sO-2N-Caus
(You caused me to kill it.)

Based on this evidence I propose the following additional verb agreement rule:

(157) *Inner Verb Agreement (first version):*
The verb of a non-final P-sector agrees in person and number with the final 2 of that sector; and if and only if the Union predicate is -khiya, the verb optionally agrees with the final 1 of that P-sector.

This is similar to Tzotzil, a language in which the verb agrees with its P-final nuclear terms (Davies and Rosen 1988:76).[22]

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[21] My language consultants were unable to verify the data in (156). The difference might be dialectal.

[22] Davies and Rosen (1988:76) give the following Tzotzil example:

Rule (157) predicts that when the inner predicate is intransitive, its argument can optionally trigger person and number agreement on the inner verb. This prediction is incorrect, regardless of whether one assumes that unaccusative advancement takes place in the inner clause.

(158) a. Ištima-ni-čhiya.
sleep-2O-Caus
He made you sleep.

b. *N-ištima-ni-čhiya.
2O-sleep-2O-Caus
(He made you sleep.)

(159) a. Ištima-wičha-wa-khiya.
sleep-3p-1sN-Caus
I made them sleep.

b. *Wičh-ištima-wičha-wa-khiya.
3p-sleep-3p-1sN-Caus
(I made them sleep.)

(160) a. Nųwą-ma-khiya.
swim-1sO-Caus
He made me swim.

b. *Wa-nųwą-ma-khiya.
1sN-swim-1sO-Caus
(He made me swim.)

Since rule (157) is incorrect for the argument of intransitive inner clauses, both unaccusative and unergative clauses, and is correct only for the 1 and 2 of transitive clauses, rule (157) needs to be revised to include only ergative and accusative arguments.

(161) *Inner Verb Agreement:*
The verb of a non-final P-sector agrees in person and number with the accusative of that sector; and if and only if the Union predicate is -khiya, the verb optionally agrees with the ergative of that P-sector.

In summary, Sioux causative clauses are similar to the Chamorro pattern in that the inner P-final 1 revalues to 2. Sioux verb agreement is similar to Tzotzil in that both the inner predicate and the causative predicate may show person and number agreement, although inner predicate agreement is very restricted. All other aspects of Sioux causative clauses follow language universal rules.

5. Summary

This article examined verb agreement and showed that there are two distinct systems in Dakota: person agreement and number agreement. In transitive predicate clauses, only final nuclear terms trigger person agreement. Number agreement may be triggered by chomeurs. These two systems give empirical evidence to the support of the multistratal analysis of unaccusative and reflexive clauses. The present work also showed that an analysis which posits advancements to direct object allows for concise generalizations of person and number agreement, whereas an analysis which does not include advancements to direct object cannot capture these generalizations.

(iii)	l-	i-	y-	ak'-	be	h-	tuc'-ø	turasnu.
	ASP-	ABS- 1st	ERG- 3rd	cause-	Adv 3-2	ERG- 1st	pick-ABS 3rd	peach

He let me pick peaches.

This article also discussed two types of Possessor Ascension. In one type the possessor assumes the grammatical relation of the host (i.e. direct object), and in the other the possessor assumes a grammatical relation other than the host (i.e. indirect object). The Possessor Ascension analyses were then shown to be the best analyses of these constructions in Dakota Sioux.

The last topic dealt with was Clause Union, in particular Causative Union. This article presented evidence that causative constructions in Sioux are multipredicate clauses. It was also shown that the inner P-final 1 revalues to 2, and that there is a restricted type of inner verb agreement, similar to Tzotzil.

All three of these topics demonstrate syntactic and morphological differences between direct objects and indirect objects, as well as obliques.

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The Tapir: A Yanomami Text

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A traditional Yanomami story is presented with interlinear glosses and free translation. The text relates the characteristics of three animals: the tapir, the squirrel, and the sloth.

Background information

This is a traditional Yanomami story, told in February of 1982 by Olukanes, a Yanomami man from Parimi-U (Brazil) who is regarded as a good storyteller by other people in the village. The story was taped by Pierrette Ziegler-Birraux, with help (interpretation and prompting) from Sandy Cue. Sandy Cue and Irma Thiele transcribed the text. Lukas, a Yanomami man from the same village, helped to explain and rephrase some parts of the story.

The work of building a hiding place for a tapir is time consuming, a fact which is expressed by the many repetitions of the action words. Three dots on the first line signify that some of these repetitions have been omitted in the transcription. It is interesting to note that only the main character is introduced at the beginning of the story; the others are identified explicitly later on in the second part of the story. The main characteristics of the participants in the story, according to Lukas are: the tapir is lazy, but somewhat intelligent; the squirrel is a hard and fast worker and intelligent; the sloth is lazy and stupid.

Structure of the presentation

The text is presented in three forms: the first line is in the practical orthography, the second line is a transcription in technical orthography, and the third gives the basic form of each morpheme, with morpheme breaks. The translation of the text is also given in three forms: first, a literal translation of each morpheme; then a translation of each word in context, where possible; and finally, a free translation for each line. Abbreviations are explained in Appendix 1.

Summary

The tapir is trying to hide, and the squirrel is encouraging him and helping him by piling up leaves on him. The tapir keeps asking whether he is completely hidden, but he is not since he is so big. The squirrel gives up and goes away. The sloth is small, however, and can hide in the trees. The tapir, being a large ground animal, is vulnerable and is hunted and eaten by people.

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1.	Xama	a	hõyamo	=m,	xama	a.
	šama	a	hõyãmõ	=m	šama	a
	šåma	a	hõyã-mu	=m	šama	a
	tapir	ClGs	hide-Rfl	Cm	tapir	ClGs
	tapir	*	hid.itself	*	tapir	*

The tapir hid itself.[1]

2.	Xama	a	hõyamo	=ma	=mki,	a	hõyaplu	mao	=m.
	šama	a	hõyãmõ	=ma	=mki	a	hõyãplu	mao	=m
	šama	a	hõyã-mu	=m	=mki	a	hõyã-plu	mao	=m
	tapir	ClGs	hide-Rfl	Cm	even.though	ClGs	hide-Pot	PGNg	Cm
	tapir	*	hid.itself	*	even.though	it	could.hide	not	*

Even though the tapir hid itself,[2] *it could not really hide.*

3.	A	hõyaplu	mao	=m.
	a	hõyãplu	mao	=m
	a	hõyã-plu	mao	=m
	ClGs	hide-Pot	PGNg	Cm
	it	could.hide	not	*

It could not really hide.[3]

4.	"Wa	hõyamoki.	Wa	hõyamoki."
	wa	hõyãmõki	wa	hõyãmõki
	wa	hõyã-mu -ki	wa	hõyã-mu -ki
	2s	hide-Rfl-AgRf	2s	hide-Rfl-AgRf
	you	hide.yourself	you	hide.yourself

"Hide yourself. Hide yourself."[4]

5.	Ỹ	naha	a	hĩkolamu,		hĩkolamu,	
	Ĩ	naha	a	hĩkolamu		hĩkolamu	
	Ĩ	naha	a	hĩkola	-mu	hĩkola	-mu
	the.preceding	like	ClGs	pile.leaves	-Rfl	pile.leaves	-Rfl
	that	like	it	piles.leaves		piles.leaves	

Thus it (the squirrel) piled up leaves, piled up leaves,[5]

hĩkolamu,		hĩkolamu...	
hĩkolamu		hĩkolamu	
hĩkola	-mu	hĩkola	-mu
pile.leaves	-Rfl	pile.leaves	-Rfl
piles.leaves		piles.leaves	

piled up leaves, piled up leaves...

6.	A	lukèke	=m.		A	hõyamo	=m.
	a	lukəke	=m		a	hõyãmõ	=m
	a	lukə -ki	=m		a	hõyã-mu	=m
	ClGs	enter-AgRf	Cm		ClGs	hide-Rfl	Cm
	it	entered	*		it	hid.itself	*

It got in (under the leaves). *It hid itself.*

7.	"Naha	tha?	Ya	hõyaki	kuha?"
	naha	t^ha	ya	hõyãki	kuha
	naha	t^ha	ya	hõyã-ki	kuha
	like	GI	1s	hide-AgRf	RPWI
	like	*	I	get.hidden	recently

(The tapir asks:) "Like this? Did I get hidden now?"

---

[1] The repetition of the subject establishes the tapir as the topic.

[2] That is, it tried to hide itself.

[3] These first three sentences are a summary of the first part of the story.

[4] The speaker here is one of the other characters of the story.

[5] The identity of the character is not made explicit until sentence 42.

8.

"Ma,	wa	hõyao	=nim.
ma	wa	hõyãõ	nim
ma	wa	hõyã-o	nim
ResI	2s	hide-Pnc	PTNg
no	you	hid	not

(The squirrel:) "No, you are not hidden.

9.

Wa	wauto	xoa	=a.	Huhu,	ho!"
wa	wauto	šoa	=a	huhu	ho
wa	wauto	šoa	a	huhu	ho
2s	be.visible	yet	Dur	(disgust)	alright
you	are.visible	still	*	(disgust)	alright

You are still visible. Oh no! Well then!"

10.

Ai	hanak	tèa	kõle	=m,	kahu	us	hanak.
ai	hanak	təa	kõlɑ	=m	kahu	us	hanak
ai	hanak	təa	kõ -li	=m	kahu	u -si	hanak
other	ClLv	take	again-PtRf	Cm	"embaúba".tree	ClLq-ClTO	ClLv
more	them	got	again	*	"embaúba".tree	*	*

It (the squirrel) got more of them (the leaves) again, "embaúba" tree leaves.

11.

Tõlooa,	tõlooa...
tõlooa	tõlooa
tõlooa	tõlooa
(fast.work)	(fast.work)
(fast.work)	(fast.work)

Quickly, quickly...

12.

Ỹ	naha	a	thaỹ	kõ,	thaỹ	kõ...
Ĩ	naha	a	tʰaĩ	kõ	tʰaĩ	kõ
Ĩ	naha	a	tʰa -ĩ	kõ	tʰa -ĩ	kõ
the.preceding	like	ClGs	make-Hab	again	make-Hab	again
that	like	it	does	again	does	again

Thus it did it again, and again...

13.

A	hĩkolamu	kõlayu,	hĩkolamu	kõlayu...
a	hĩkolamu	kõlãyñ	hĩkolamu	kõlãyñ
a	hĩkola -mu	kõ -layu	hĩkola -mu	kõ -layu
ClGs	pile.leaves-Rfl	again-Inc	pile.leaves-Rfl	again-Inc
it	piling.leaves	begins.again	piling.leaves	begins.again

It began piling up leaves again, and again...

14.

A	lukèa	kõke	=m.
a	lukəa	kõke	=m
a	lukə -a	kõ -ki	=m
ClGs	enter-Lk	again-AgRf	Cm
it	entered	again	*

It (the tapir) went in (under the leaves) again.

15.

"Naha	tha?	Ya	hõyaki	kuha?	Hei_tehe	tha?"
naha	tʰa	ya	hõyãki	kuha	hei_tehe	tʰa
naha	tʰa	ya	hõyã-ki	kuha	hei-tehe	tʰa
like	GI	1s	hide-AgRf	RPWI	Px -when	GI
like	*	I	get.hidden	recently	now	*

(The tapir asks:) "Like this? Did I get hidden now? Now?"

16.

"Ma,	wa	wauto	xoaa.
ma	wa	wauto	šoaa
ma	wa	wauto	šoa-a
ResI	2s	be.visible	yet-Dur
no	you	are.visible	still

(The squirrel:) "No, you are still visible.

17.
```
Huhu,       hmm,        ho,         hā,     hā."
huhu        hmm         ho          hā      hā
huhu        hmm         ho          hā      hā
(disgust)   (thinking)  all.right   (moan)  (moan)
(disgust)   (thinking)  all.right   (moan)  (moan)
```
Harrumph; hmm; all right; oooh; oooh."

18.
```
"Ya  ka  hōyaa     totihiplamoli!
 ya  ka  hōyāā     totihiplamoli
 ya  ka  hōyā-a    totihi-pla -mu -li
 1s  ?   hide-Dur  good  -AcIn-Rfl-PtRf
 I   *   hide      well.make.myself
```
(The tapir:) "I wish I could get well hidden!

19.
```
Ya ka hōyaa     ka   totihiki!     Ai_ham!      Taaỹ     kō."
ya ka hōyāā     ka   totihiki      ai_ham       taaï     kō
ya ka hōyā-a    ka   totihi-ki     ai_ham       taa-ï    kō
1s ?  hide-Dur  Cptz good  -AgRf   more         see-Hab  again
I  *  hide      that get.well      more         get      again
```
I wish I could get well hidden! More (leaves)! Get (leaves) again."

20.
```
Ai    a    toa  kōlali,            toa  kōlali...
ai    a    toa  kōlālĕ             toa  kōlālĕ
ai    a    toa  kō   -la  -li      toa  kō   -la  -li
other ClGs take again-AcIt-PtRf    take again-AcIt-PtRf
more  it   gets repeatedly.again   gets repeatedly.again
```
It (the squirrel) got more (leaves) again, and again...

21.
```
Ỹ               naha a    hōyamu        kōo     =m.
Ï               naha a    hōyāmñ        kōō     =m
Ï               naha a    hōyā-mu       kō      =m
the.preceding   like ClGs hide-Rfl      again   Cm
that            like it   hides.itself  again   *
```
Thus it (the tapir) hid itself again.

22.
```
Yaa         hanak ha   laapo          tỹ        =n,
yaa         hanak ha   laapo          tï        =n
yaa         hanak ha   laa -pu        tayu      =n
leaves/Gen  ClLv  Cj   fill-(carry)   AcLo      after
leaves      *     *    fill           (inland)  after
```
After it filled in (holes) with leaves,

```
a    thaỹ      kōo,    thaỹ      kōo...
a    tʰaï      kōō     tʰaï      kōō
a    tʰa -ï    kō      tʰa -ï    kō
ClGs make-Hab  again   make-Hab  again
it   does      again   does      again
```
it did it again, and again...

23.
```
(A   ple      yalo,    xama  a    ple      yalo,
a    ple      yalo     šama  a    ple      yalo
a    ple      yalo     šama  a    ple      yalo
ClGs be.big   because  tapir ClGs be.big   because
it   is.big   because  tapir *    is.big   because
```
(Because it is big, because the tapir is big,

```
xama  a    ple     kuteen.)
šama  a    ple     kuteen
šama  a    ple     kuteen
tapir ClGs be.big  since
tapir *    is.big  since
```
since the tapir is big.)

24.

A	hõyaa	kõmake	=m.
a	hõyãã	kõmãke	=m
a	hõyã-a	kõ -ma -ki	=m
ClGs	hide-Lk	again-Caus-AgRf	Cm
it	hide	caused.again.to.get	*

It (the squirrel) caused it (the tapir) to get hidden again.

25.

"Naha	tha?	Ya	hõyaki	kuha?"
naha	t^ha	ya	hõyâki	kuha
naha	t^ha	ya	hõyã-ki	kuha
like	GI	1s	hide-AgRf	RPWI
like	*	I	get.hidden	recently

"Like this? Did I get hidden now?"

26.

"Ma,	hei	hei	hei	ha	wa	wauto	xoaa.
ma	hei	hei	hei	ha	wa	wauto	šoaa
ma	hei	hei	hei	ha	wa	wauto	šoa-a
ResI	Px	Px	Px	Loc	2s	be.visible	yet-Dur
no	here	here	here	*	you	are.visible	still

"No, you are still visible here, here, and here.

27.

Ho,	ã-aa,	ya	hixiu	tikolayu	ta."
ho	[ã?ãã]	ya	hišiu	tikolayu	ta
ho	ã?ãã	ya	hišiu	tiko -layu	ta
all.right	yes	1s	angry	against.wish-Inc	supposedly
all.right	yes	I	angry	become.against.wish	supposedly

All right, yes, I'm getting angry."

28.

Moli	a	hõyaa	kõplamolayo	=m.
moli	a	hõyãã	kõplamolayo	=m
moli	a	hõyã-a	kõ -pla -mu -layu	=m
one	ClGs	hide-Dur	again-AcIn-Rfl-Inc	Cm
once	it	hidden	became.itself.again	*

Once more it was hiding itself again.

29.

Hỹ	klaiwa,	klaiwa...
hĩ	klaiwa	klaiwa
hĩ	klaiwa	klaiwa
(hurry)	(sound.of.crackling.twigs)	(sound.of.crackling.twigs)
(hurrying)	(sound.of.crackling.twigs)	(sound.of.crackling.twigs)

(Sound of the squirrel hurrying, breaking lots of little twigs.)

30.

A	thaa	kõki,	thaa	kõki...
a	t^haa	kõki	t^haa	kõki
a	t^ha -a	kõ -ki	t^ha -a	kõ -ki
ClGs	make-Dur	again-AgRf	make-Dur	again-AgRf
it	does	again	does	again

It (the squirrel) did it (getting leaves) again, and again...

31.

A	hõyaa	kõplamolayom.
a	hõyãã	kõplamolayo
a	hõyã-a	kõ -pla -mu -layu
ClGs	hide-Dur	again-AcIn-Rfl-Inc
it	hidden	became.itself.again

It (the tapir) was hiding itself again.

32.

"Naha	tha?	Ma,	hei_tehe	ya	hõyaa	yaike	=m.
naha	t^ha	ma	hei_tehe	ya	hõyãã	yaike	=m
naha	t^ha	ma	hei-tehe	ya	hõyã-a	yai -ki	=m
like	GI	ResI	Px -when	1s	hide-Dur	really-AgRf	Cm
like	*	well...	now	I	hidden	really.got	*

"Like this? Well, now I really got hidden.

33.

Ya	hõyake	=m.	Naha	tha?	Ya	hõyaa	mahiki	kuha?"
ya	hõyãke	=m	naha	t^ha	ya	hõyãã	mahiki	kuha
ya	hõyã-ki	=m	naha	t^ha	ya	hõyã-a	mahi-ki	kuha
1s	hide-AgRf	Cm	like	GI	1s	hide-Dur	much-AgRf	RPWI
I	got.hidden	*	like	*	I	hidden	got.much	recently

I got hidden. Like this? Did I get quite hidden now?"

34.

"Ma,	wa	wauto	xoaa."
ma	wa	wauto	šoaa
ma	wa	wauto	šoa-a
ResI	2s	be.visible	yet-Dur
no	you	are.visible	still

(The squirrel:) "No, you are still visible."

35.

"Ho,	hmm."
ho	hmm
ho	hmm
all.right	(thinking)
all.right	(thinking)

(The tapir:) "Well then, hmm."

36.

A	wayaa	mahilayo	=m.	A	wayalayo	=m.
a	wayaa	mahilayo	=m	a	wayalayo	=m
a	waya -a	mahi-layu	=m	a	waya -layu	=m
ClGs	angry-Dur	much-Inc	Cm	ClGs	angry-Inc	Cm
it	angry	became.very	*	it	became.angry	*

It (the squirrel) became very angry. It became angry.

37.

Ã-aa,	ỹ	naha	a	kua	xoalayo	=m.
[ã?ãã]	ĩ	naha	a	kua	šoalayo	=m
ã?ãã	ĩ	naha	a	ku-a	šoa-layu	=m
yes	the.preceding	like	ClGs	be-Dur	yet-Inc	Cm
yes	that	like	it	became	yet	*

Yes, it became like that then.

38.

A	wayalayu	tehe,
a	wayalayu	tehe
a	waya -layu	tehe
ClGs	angry-Inc	when
it	became.angry	when

When it became angry,

ulihi	ham	a	kua	xoalaa	hỹlỹ	=m.
ulihi	ham	a	kua	šoalaa	hĩlĩ	=m
ulihi	ham	a	ku-a	šoa-l -aa	hĩlĩ	=m
jungle	Dir	ClGs	be-Dur	yet-Lk-leave	away	Cm
jungle	into	it	to.stay	left.yet	away	*

it went away to stay in the jungle.

39.

"Ma,	ya	hõyaploim.	Ya	hõyaploim.
ma	ya	hõyãploim	ya	hõyãploim
ma	ya	hõyã-plu-im	ya	hõyã-plu-im
ResI	1s	hide-Pot-FuNg	1s	hide-Pot-FuNg
no	I	not.able.to.hide	I	not.able.to.hide

(The tapir:) "No, I can't get hidden. I can't get hidden.

40.

Ya	hõyaploim	tehe,	ya	hõyamamoim."
ya	hõyãploim	tehe	ya	hõyãmamoim
ya	hõyã-plu-im	tehe	ya	hõyã-ma -mu -im
1s	hide-Pot-FuNg	when	1s	hide-Caus-Rfl-FuNg
I	not.able.to.hide	if	me	make.me.not.hide.myself

If I can't get hidden, don't make me hide myself."

41.

Xỹmỹ	yalo	a	wâisip,	ỹ	naha.
šĩmĩ	yalo	a	wâĩsip	ĩ	naha
šĩmĩ	yalo	a	wâĩsip	ĩ	naha
sloth	animal	ClGs	be.small	the.preceding	like
sloth	animal	*	is.small	that	like

The sloth is a small animal, like this.[6]

42.

Waipaxi	a.	Waipaxi	a	wâisip	mahi,
waipaši	a	waipaši	a	wâĩsip	mahi
waipaši	a	waipaši	a	wâĩsip	mahi
squirrel	ClGs	squirrel	ClGs	be.small	much
squirrel	*	squirrel	*	is.small	very

The squirrel. The squirrel is very small,

ỹ	naha	thei	kuo	wi.
ĩ	naha	tʰei	kuo	wi
ĩ	naha	tʰei	ku-o	wi
the.preceding	like	Dim	be-Pnc	Nom
this	like	little	is	one

the kind that is little, like this.[7]

43.

Ỹhỹ	e	ku	=ma:
ĩhĩ	e	ku	=ma
ĩhĩ	e	ku	=m
that.one	ClCK	be	Cm
that.one	*	said	*

That one said:

44.

(Ỹhỹ	=n	a	hôyama	=m.
ĩhĩ	=n	a	hôyâma	=m
ĩhĩ	=n	a	hôyâ-ma	=m
that.one	Erg	ClGs	hide-Caus	Cm
that.one	*	it	caused.to.hide	*

(That one had hidden it (the tapir).

45.

Waipaxi	a	ihilup	e	=n	a	hôyama	=m.)
waipaši	a	ihilup	e	=n	a	hôyâma	=m
waipaši	a	ihilup	e	=n	a	hôyâ-ma	=m
squirrel	ClGs	offspring	ClPs	Erg	ClGs	hide-Caus	Cm
squirrel	*	its.young	*	*	it	caused.to.hide	*

A baby squirrel had made it hide.)

46.

"Ho,	kaho	wa	xĩlo	hôyake	=m."
ho	kaho	wa	šĩlô	hôyâke	=m
ho	kaho	wa	šĩlô	hôyâ-ki	=m
all.right	2Emp	2s	only	hide-AgRf	Cm
all.right	*	you	only	got.hidden	*

(To the sloth:) "All right, only you got hidden."

47.

"Ma,	kami	ya	xĩ	hôyaa	ayake		=m."
ma	kami	ya	šĩ	hôyââ	ayake		=m
ma	kami	ya	šĩlô	hôyâ-a	aya	-ki	=m
ResI	1Emp	1s	only	hide-Lk	differently-AgRf		Cm
yes	*	I	only	got.hidden	different.from.others		*

(The sloth:) "Yes, only I got hidden."

---

[6] The narrator indicated a small size with his hands.

[7] The narrator indicated a small size with his hands.

48.

Hapi	naha	xama	e‿ha	a	kulayo	=m:
hapi	naha	šama	e‿ha	a	kulayo	=m
hapi	naha	šama	e‿ha	a	ku -layu	=m
the.following	like	tapir	to	ClGs	say-Inc	Cm
this	like	tapir	to	it	said	*

This is what he said to the tapir:

49.

"Lahok	wa	kŷk	waa	totihili,
lahok	wa	kĭk	waa	totihili
lahok	wa	kĭk	wa -a	totihi-li
wide.arrow.point	2s	ClGr	eat-Dur	good -PtRf
wide.arrow.point	you	*	get.hit	well

"You will be hit easily by "lahok" arrow points,[8]

50.

kaho	=n,	wa	pleo	wi	=n,
kaho	=n	wa	pleo	wi	=n
kaho	=n	wa	ple -o	wi	=n
2Emp	Erg	2s	be.big-Pnc	Nom	Erg
*	*	you	are.big	the.one.that	*

you, who are big,

maxi	tha	ha	wa	hu	wi	=n.
maši	tʰa	ha	wa	hu	wi	=n
maši	tʰa	ha	wa	hu	wi	=n
earth	ClEa	Loc	2s	go	Nom	Erg
ground	*	on	you	walk	the.one.that	*

you, who walk on the ground.

51.

Lahok	a	=n	wa	niaplali	=he.
lahok	a	=n	wa	niaplali	=he
lahok	a	=n	wa	nia -pla -li	he
wide.arrow.point	ClGs	Inst	2s	shoot.arrow-AcIn-PtRf	3TrPA
wide.arrow.point	*	with	you	shoot.arrow	*

People will shoot you with "lahok" arrow points.

52.

Hei,	kami	ya	taaploim.	Tile	ha	kami	ya	kua.
hei	kami	ya	taaploim	tile	ha	kami	ya	kua
hei	kami	ya	taa-plu-im	tile	ha	kami	ya	ku-a
Px	1Emp	1s	see-Pot-FuNg	high	Loc	1Emp	1s	be-Dur
look	*	me	one.cannot.see	high	up	*	I	am
Look, no one can see me.				*I stay up high (in the trees).*				

53.

Ya	taa	yaiploim.
ya	taa	yaiploim
ya	taa	yai -plu-im
1s	see	really-Pot-FuNg
me	see	one.really.cannot

No one can see me at all.

54.

Tile	ham	ya	hõyake	=m.	Kami	ya	hõyaa	yaya.
tile	ham	ya	hõyãke	=m	kami	ya	hõyãã	yaya
tile	ham	ya	hõyã-ki	=m	kami	ya	hõyã-a	yai -a
high	Loc	1s	hide-AgRf	Cm	1Emp	1s	hide-Lk	really-Dur
high	up	I	got.hidden	*	*	I	hide	really
I have got hidden up high.					*I really am hidden.*			

---

[8] *Lahok* is a relatively wide arrow point that is used for big game.

55.

Kaho	wa,	maxi	tha	ha,	kaho	wa,	wa	ple	yalo,
kaho	wa	maši	tʰa	ha	kaho	wa	wa	ple	yalo
kaho	wa	maši	tʰa	ha	kaho	wa	wa	ple	yalo
2Emp	2s	earth	ClEa	Loc	2Emp	2s	2s	be.big	because
*	you	ground	*	on	*	you	you	are.big	because

You, on the ground, because you are big,

wa	hu	wi,
wa	hu	wi
wa	hu	wi
2s	go	Nom
you	walk	the.one.that

you that walk,[9]

lahok	a	=n	wa	wali		=he.
lahok	a	=n	wa	wali		=he
lahok	a	=n	wa	wa	-li	he
wide.arrow.point	ClGs	Inst	2s	eat	-PtRf	3TrPA
wide.arrow.point	*	with	you	hit		*

people are going to hit you with "lahok" arrow points.

56.

Wa	thali	=he.
wa	tʰali	=he
wa	tʰali	he
2s	shoot	3TrPA
you	shoot	*

They will shoot you.

57.

Wa	niamu		ayao.",	
wa	niamu		ayao	
wa	nia	-mu	aya	-o
2s	shoot.arrow	-engaged.in	differently	-Pnc
you	shoot		different.from.others	

They will shoot only you,"

xỹmỹ	e	kulayo	=m,	waipaxi	a	wei	xo
šĩmĩ	e	kulayo	=m	waipaši	a	wei	šo
šĩmĩ	e	ku -layu	=m	waipaši	a	wei	šo
sloth	ClCK	say-Inc	Cm	squirrel	ClGs	Dim	and
sloth	*	said	*	squirrel	*	little	with

the sloth said that, together with the little squirrel,

ỹ	naha	waipaxi	a	wei,
ĩ	naha	waipaši	a	wei
ĩ	naha	waipaši	a	wei
the.preceding	like	squirrel	ClGs	Dim
this	like	squirrel	*	little

a little squirrel like this,

ỹ	naha	a	wãisiapeo		wi	xo,
ĩ	naha	a	wãĩsĩãpeo		wi	šo
ĩ	naha	a	wãĩsiape	-o	wi	šo
the.preceding	like	ClGs	small	-Pnc	Nom	and
this	like	it	small		the.one	with

(he said it) with one small like this,[10]

---

[9] The meaning is: *You that walk on the ground because you are so big.*

[10] The narrator indicated a small size with hands, and other sizes in the following sentences.

pei	xĩna	wi,
pei	šĩnã	wi
pei	šĩnã	wi
3PsIn	tail	Nom
its	tail	the.one.that

one whose tail,

ỹ	naha	xĩna	wi	kuo	wi.
ĩ	naha	šĩnã	wi	kuo	wi
ĩ	naha	šĩnã	wi	ku-o	wi
the.preceding	like	tail	Nom	be-Pnc	Nom
this	like	tail	the.one.that	being	one

its tail being like this.

58.

Ai	waipaxi	a	xomi	a	ple	puo.	
ai	waipaši	a	šomi	a	ple	puo	
ai	waipaši	a	šomi	a	ple	pu	-o
other	squirrel	ClGs	different	ClGs	be.big	simply-Pnc	
another	squirrel	*	different	it	is.big	simply	

A different squirrel is just big.[11]

59.

Ỹ	naha	a	ple	puo.	
ĩ	naha	a	ple	puo	
ĩ	naha	a	ple	pu	-o
the.preceding	like	ClGs	be.big	simply-Pnc	
this	like	it	is.big	simply	

It is big like this.

60.

Ai	wãisip	thei	a	wãisip	paxiu.
ai	wãĩsip	t^hei	a	wãĩsip	pašiu
ai	wãĩsip	t^hei	a	wãĩsip	pašiu
other	be.small	Dim	ClGs	be.small	differently
another	small	little	*	is.small	in.contrast

The tiny little one is small in contrast.

61.

Ỹhỹ	a	wei	taaploim.	A	taaploim.
ĩhĩ	a	wei	taaploim	a	taaploim
ĩhĩ	a	wei	taa-plu-im	a	taa-plu-im
that.one	ClGs	Dim	see-Pot-FuNg	ClGs	see-Pot-FuNg
that.one	it	little	one.cannot.see	it	one.cannot.see

One cannot see a little one like that. *One cannot see it.*

62.

Ỹhỹ	a,	yanèmam	a	=n	a	waỹ	wi	a	mi,
ĩhĩ	a	yanəmam	a	=n	a	waĩ	wi	a	mi
ĩhĩ	a	yanəmam	a	=n	a	wa -ĩ	wi	a	mi
that.one	ClGs	person	ClGs	Erg	ClGs	eat-Hab	Nom	ClGs	PrNg
that.one	*	people	*	*	it	eating	one	*	does.not.exist

People can't eat that one,

a	taa	mahiploim	yalo.
a	taa	mahiploim	yalo
a	taa	mahi-plu-im	yalo
ClGs	see	much-Pot-FuNg	because
it	see	cannot.at.all	because

because they cannot see it at all.

---

[11] There are other squirrels that are big.

63.	A	wãisip	mahi	yalo,	a	taaploim	mahi.
	a	wãĩsip	mahi	yalo	a	taaploim	mahi
	a	wãĩsip	mahi	yalo	a	taa-plu-im	mahi
	ClGs	be.small	much	because	ClGs	see-Pot-FuNg	much
	it	is.small	very	because	it	one.cannot.see	at.all

Because it is very small, one cannot see it at all.

64.	Waipaxi	a	ple	yalo,	a	xĩ	taaplu	puo.	
	waipaši	a	ple	yalo	a	šĩ	taaplu	puo	
	waipaši	a	ple	yalo	a	šĩlõ	taa-plu	pu	-o
	squirrel	ClGs	be.big	because	ClGs	only	see-Pot	simply-Pnc	
	squirrel	*	is.big	because	it	only	can.see	simply	

Because the (other) squirrel is big, one can see it.

65.	Ỹ	naha	a	kuo	wi,	a	xĩ	wauto	yai.
	Ĩ	naha	a	kuo	wi	a	šĩ	wauto	yai
	Ĩ	naha	a	ku-o	wi	a	šĩlõ	wauto	yai
	the.preceding	like	ClGs	be-Pnc	Nom	ClGs	only	be.visible	really
	this	like	it	is	one.that	it	only	is.visible	really

One that is like this, only it is really visible.

66.	"Kami	ya	hõyaa	ayake		=m.
	kami	ya	hõyãã	ayake		=m
	kami	ya	hõyã-a	aya	-ki	=m
	1Emp	1s	hide-Lk	differently-AgRf		Cm
	*	I	hidden	different.from.others		*

(The sloth:) "I got hidden alone.

67.	Kami	ya	xĩ	taaploim.	Kami	ya	taaploim.
	kami	ya	šĩ	taaploim	kami	ya	taaploim
	kami	ya	šĩlõ	taa-plu-im	kami	ya	taa-plu-im
	1Emp	1s	only	see-Pot-FuNg	1Emp	1s	see-Pot-FuNg
	*	I	only	one.cannot.see	*	me	one.cannot.see

I'm the only one that people cannot see. *People cannot see me.*

68.	Ya	hõyaa	ayake		=m,"	xỹmỹ	e	kulayo	=m.
	ya	hõyãã	ayake		=m	šĩmĩ	e	kulayo	=m
	ya	hõyã-a	aya	-ki	=m	šĩmĩ	e	ku -layu	=m
	1s	hide-Lk	differently-AgRf		Cm	sloth	ClCK	say-Inc	Cm
	I	got.hidden	different.from.others		*	sloth	*	said	*

I got hidden alone," *said the sloth.*

69.	Ma,	xỹmỹ	a	taaploim	yalo,	a	taaploim	kuteen.
	ma	šĩmĩ	a	taaploim	yalo	a	taaploim	kuteen
	ma	šĩmĩ	a	taa-plu-im	yalo	a	taa-plu-im	kuteen
	ResI	sloth	ClGs	see-Pot-FuNg	because	ClGs	see-Pot-FuNg	since
	yes	sloth	*	one.cannot.see	because	it	one.cannot.see	since

Oh yes, it's because one cannot see a sloth, since one cannot see it.

70.	"Kaho	wa	ple	yalo,
	kaho	wa	ple	yalo
	kaho	wa	ple	yalo
	2Emp	2s	be.big	because
	*	you	are.big	because

"Because you are big.

maxi	tha	ha	wa	hu	wi	wa	waỹ	=he.
maši	t^ha	ha	wa	hu	wi	wa	waĩ	=he
maši	t^ha	ha	wa	hu	wi	wa	wa -ĩ	he
earth	ClEa	Loc	2s	go	Nom	2s	eat-Hab	3TrPA
ground	*	on	you	walk	one.that	you	eat	*

they will eat you, you that walk on the ground.

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71.	Lahok	a	=n	wa	ha	thali	=he	=n,
	lahok	a	=n	wa	ha	t^{h}ali	=he	=n
	lahok	a	=n	wa	ha	t^{h}ali	he	=n
	wide.arrow.point	ClGs	Inst	2s	Cj	shoot	3TrPA	after
	wide.arrow.point	*	with	you	*	shoot	*	after

After they shoot you with arrow points,

72.	wa	waỹ	=he.
	wa	waĩ	=he
	wa	wa -ĩ	he
	2s	eat-Hab	3TrPA
	you	eat	*

they will eat you.

73.	Lahok	wa	=p	waỹ	totihaỹ,"	
	lahok	wa	=p	waĩ	totihaĩ	
	lahok	wa	pə	wa -ĩ	totih=a	-ĩ
	wide.arrow.point	2s	ClGp	eat-Hab	well	-Hab
	wide.arrow.point	you	*	be.hit	easily	

You will easily get hit by arrow points,"

ỹ	naha	yauwele	kulayo	=m,	yauwele	=s.
ĩ	naha	yauwele	kulayo	=m	yauwele	=s
ĩ	naha	yauwele	ku -layu	=m	yauwele	si
the.preceding	like	sloth	say-Inc	Cm	sloth	ClTO
that	like	sloth	said	*	sloth	little

that's what the sloth said, the little sloth.

Appendix 1. Abbreviations

AcIn	Action Intensity	GI	General Interrogative
AcIt	Action Iteration	Hab	Habitual
AcLo	Action Location	Inc	Inchoative
AgRf	Agent Referential	Inst	Instrumental Marker
Caus	Causative	Loc	Locational
Cj	Conjunction	Lk	Link
ClCK	Classifier	Nom	Nominalizer
ClEa	Classifier Earth	Pnc	Punctiliar
ClGs	Classifier General Singular	Pot	Potential
ClGp	Classifier General Plural	PrNg	Present Negation
ClLv	Classifier Leaves	PGNg	Past General Negation
ClLq	Classifier Liquid	PTNg	Past Total Negation
ClPs	Classifier People Singular	PtRf	Patient Referential
ClTO	Classifier	Px	Proximate
Cm	Completive	ResI	Response Interjection
Cptz	Complementizer	Rfl	Reflexive
Dim	Diminutive	RPWI	Recent Past Witness Interrogative
Dur	Durative		
Emp	Emphatic Pronoun	1s	First Person Singular
Erg	Ergative Case Marker	2s	Second Person Singular
FuNg	Future Negative	3PsIn	Third Possessive Inalienable
Gen	General	3TrPA	Transitive Plural Agent

One Less Crazy Rule

Stephen A. Marlett

An earlier description of Seri morphology contained a crazy metathesis rule. This rule is shown to be spurious, that what was thought to be one morpheme is actually the combination of two independently attested and previously described morphemes. The combination of the two has the illocutionary force of a hortative.

Perhaps every descriptive grammar contains at least one crazy-looking rule. The description that I gave of Seri (Marlett 1981) was no exception. In this brief article I show that one of the worst of these rules can be dispensed with.

First person plural imperatives in Seri are illustrated by the following data (presented with the third person plural realis form for comparison):

(1)	*Affirmative*	*Negative*	*Realis*		*Root*
	sapkóoyo	smapkóoyo	itpkóoyo	*taste (it)*	-pkooyo
	sǽnæk	smǽnæk	itóonæk	*carry (it)*	-oonæk
	skamáiX	somkamáiX	tmáiX	*be quiet*	-maiX
	skóoša	somkóoša	tóoša	*talk*	-ooša

The prefix for first person plural imperative was described as having two suppletive allomorphs: `/ska/` in finally intransitive clauses,[1] and `/sa/` plus an Ablaut process (to account for the change from `/oo/` to `/æ/` in verbs like *carry* in finally transitive clauses.) The final vowel of these prefixes deletes before a vowel. Therefore underlying `{sa-oonæk}` becomes `/sǽnæk/`, and `{ska-ooša}` becomes `/skóoša/`.

All this is fairly ordinary and typical of Seri verb morphology. The crazy rule which I proposed was to deal with the odd placement of the negative prefix `/m/`. Note that it comes after the `/s/` rather than after the `/a/`, and precedes the `/k/` in the 'intransitive' allomorph. The following crazy metathesis rule was given:

```
(2)    s (k) a + m
       1  2  3   4    =>   1  4  2  3
```

This rule, highly suspect, was meant to change `{sa-m-pkooyo}` to `/smapkóoyo/`, and `{ska-m-maiX}` to `/somkamáiX/`. (An independently motivated rule epenthesizing `/o/` also applies to the latter form.)

A solution for this problem can be found by examining other parts of the morphology. I now propose that there is no such thing as a first person plural imperative prefix in Seri. Instead, a combination of prefixes (described elsewhere in the grammar already) has the illocutionary force of an imperative or hortative. One prefix is `/si/`, the common independent irrealis prefix which appears in simple future clauses and nominalized future clauses. It may also have the force of a hortative in sentences such as the following:[2]

```
(3)    ispkóoyo         ?a?a.
       i-si-pkooyo      ?a-?a
       OM-Ir-taste/Pl   Aux-Decl
```
They should taste it.

---

[1] The terminology is from Relational Grammar. A finally intransitive clause is roughly equivalent to a superficially intransitive clause.

[2] Abbreviations: 1EmPro - first person emphatic pronoun, 1EmS - first person emphatic subject agreement, Aux - Auxiliary, Decl - Declarative, Ir - Irrealis, OM - Object Marker, Pl - Plural.

The other prefix is the first person emphatic prefix. This prefix isn't very commonly used, but is well-documented nevertheless. If the pronoun `/?atáæ/` *as for me* is used, the verb is inflected with the emphatic subject agreement morpheme. This morpheme replaces the normal first person singular subject prefix, although it does not have the same position class.

(4)	`?atáæ`	`sapíi`	`?a?a`
	`?atáæ`	`si-aa-pii`	`?a-?a`
	`1EmPron`	`Ir-1EmS-taste`	`Aux-Decl`
	As for me, I will taste it.		

The morpheme has two suppletive allomorphs: `/aa/` (plus Ablaut) in finally transitive clauses, and `/kaa/` in finally intransitive clauses.

Although other morphemes in the language also use the Ablaut rule, the facts that (1) the first person plural imperative and the first person emphatic form utilize Ablaut, (2) both morphemes have an *s*, and (3) both have a *k* in the intransitive allomorph, suggest that something is being missed.

The solution to the problem is now quite obvious. The negative morpheme occurs where it does because that is where the morphology puts it. There is no metathesis rule. The combination of the irrealis prefix and the first person emphatic prefix is used for first person plural imperatives.[3] The form `somkamáiX` *let's not be quiet* is derived from underlying `{si-m-kaa-maiX}` (Ir-Negative-1EmS-be.quiet/Pl) simply by the application of the phonological rules and without any crazy rule at all.

References

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[3] The difference in vowel length between `/ska/` (of the original description for the first person plural imperative) and `/kaa/` (the first person emphatic prefix) is presumably an error. The difference between positing an underlying long vowel and an underlying short vowel would show up in surface forms only in a very limited environment and would be barely discernible. It needs to be checked, however.

Writing, Teacher Training, and Grammar

Jim Meyer

In many English syntax courses aimed at future middle and high school teachers of English, we perpetuate grammar separated from any meaningful context. We ought instead to use the students' own writing as the basis for the syntactic analysis of English; this allows them to break out of the workbook mode of teaching and learning and encourages them to see syntax as a dynamic field of research.

Although the debate over the teaching of formal grammar has raged for some time, the conclusions of Braddock, Lloyd-Jones, and Schoer in 1963 ("the teaching of formal grammar has a negligible or... even a harmful effect on the improvement of writing," pp. 37-38) and of Hillocks in 1986 ("The study of traditional school grammar... has no effect on raising the quality of student writing," p. 248) have seemed for many to bring the matter to an uncompromising conclusion: formal grammar should not be taught as a means of improving students' writing skills. Perhaps, as Sanborn has argued, formal grammar should not be taught at all except in the upper grades of secondary school as an elective.

More recently, Noguchi has argued that grammar *can* improve writing--but only a limited kind of grammar, a "writer's grammar." Noguchi begins his monograph with an analysis of the relationship between grammar and writing and concludes that, while we have certainly shown that formal grammar instruction *has not been* applied to students' writing, we have not shown that it *cannot be*. Grammar instruction that might improve writing must differ from traditional grammar instruction in two ways: first, it must be clearly focused on those grammatical structures which are "the real basics," and secondly, we must change the way in which grammar is taught. Noguchi sketches the relationship he sees between grammar and writing clearly: "[T]his type of grammar [a tool for writing improvement] should not be taught for its own sake..., nor should it be taught in isolation from writing activities. Ideally, this grammar will be integrated with writing instruction" (Noguchi 1991:17-18).

Although I agree with Noguchi's basic statement, what troubles me is the assumptions that are made about the relationship of writing and grammar instruction *in the context of grammar as an academic subject*. Because Noguchi carefully (and rightly) distinguishes between grammar-for-writing and grammar-as-an-academic-subject, the discussion may lead to this unfortunate conclusion: In writing classes, we must not separate the students' own writing from grammar instruction; however, grammar taught as an academic subject has no relation to the students' own writing.

This leads, then, to methods of training future English teachers which perpetuate ineffectual learning of grammar in the first place. These future teachers--or other students enrolled in a course in English syntax/grammar--learn to study grammar outside of any context, without relationship to their own use of language; they do not find it easy to go into the schools and begin teaching any kind of grammar as related to student writing.

The kind of grammar instruction that we tolerate, at all levels from the early elementary grades to college, must change if we are to bring grammar and writing together. Seeing the link between grammar and writing does not simply mean that we integrate grammar into the writing classroom; it also must mean that we integrate writing into the grammar classroom, at the college level where English syntax as an academic subject is generally taught.

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Currently grammar instruction usually looks like this: discussion of a grammatical point with examples carefully chosen to illustrate those points, then carefully chosen exercises, then another grammatical point. And this is far too often the case at every level of grammar instruction: college textbooks for grammar classes look distressingly like the *Warriner's* texts used in junior high and high school. Even textbooks with titles that promise to be different, such as Veit's *Discovering Grammar*, fit that mold.

Now compare what we know about effective teaching with these usual methods of grammar instruction.[1]

We know that ideas must be presented in terms of what the learner already knows if they are to be learned. Yet grammar instruction generally has nothing to do with our own experiences with language; the sentences used come from the textbook and from worksheets.

We know that students must feel some need to learn, must sense what Piaget has called cognitive dissonance. Yet grammar instruction is generally presented as if the syntactic analysis of English is a fixed artifact, there to be learned simply because it's there.

We know that learning based on the students' own discovery of the content is more likely to succeed than learning based on the teacher's presentation of the material, and that content learned by discovery is more likely to be retained. Yet grammar is traditionally taught entirely by exposition.

And because true learning depends on the students' own sense of cognitive dissonance and discovery, it is clear that we must see learning as a spiral. We must come back to the same general topics in new ways, in new contexts, and in new depth. Grammar instruction typically is based on repetition instead, with the same definition of *noun* and virtually identical exercises used year after year.

We know that we have to choose between depth and coverage, and that trying to cover too many topics can mean that nothing is learned adequately. Yet we pretend that we can present overviews of English syntax--perhaps even two or three competing theories--in a single course.

Given the traditional approach to teaching grammar, it is not surprising that there is little retention and that motivation is low. But grammar does not have to be taught in this way. The structure of English syntax, as an academic subject in its own right, can be taught effectively if, in addition to recognizing the role grammar can play in the writing class, we also recognize the role that writing ought to play in the grammar class. For the remainder of this article I present an overview of a university course in English grammar/syntax which takes seriously the role of writing in teaching grammar.

Context: Their Own Texts

First, to insure that students have personal experience with language, they themselves create the texts that are to be used for grammatical analysis. At the time that they are given a writing assignment, they do not know what point of grammar is to be considered. The focus is thus on their having a realistic experience with language rather than on creating a paragraph with lots of adjectives or prepositional phrases.

The writing assignments for the course, certainly, have to be structured, and this is part of the instructor's job. DeBeaugrande makes the point that grammar textbooks have "traditionally... been easy to write and hard to use" but argues that we must now turn things around and put the burden of work on the course designer or on the instructor (1984:364). And the instructor can make writing assignments so that certain grammatical structures are generated naturally; for example, an assignment calling for dialogue will generate questions, so this assignment can be used to provide students with material for analyzing question formation in English. Likewise, an assignment calling for "how to" will generate imperatives. It was my job to devise assignments that would give students usable and challenging data to analyze.[2]

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[1] These statements are based primarily on the theories of Jerome Bruner and Jean Piaget; for further discussion see Berlyne 1965, Bruner 1979, Bybee and Sund 1982, Duckworth 1979, Piaget 1974, and Worthen 1968.

Method: Discovery, Not Exposition

The idea of teaching by discovery in a college grammar class could be daunting; how can we pretend that students are "discovering" what a *subject* is when they have heard the definition since grade school? But this is the role of the writing assignments that are used: I do not ask students "Write several sentences illustrating the grammatical notion of *subject*" but rather make an assignment designed to produce natural text which will allow discovery of the grammatical notion. The discussion of what a subject is, for example, grows from looking at questions--what can students observe about questions, and about the relationship between questions and statements? Given those observations, what statements can be made about the structure of sentences in English? We then arrive at some notion of subject--and even those who were ready to parrot a "correct" definition from elementary school have discovered something about subjects.

This process is repeated throughout the semester: after a writing assignment of a lab report, we focus on passives and on objects; after writing instructions, we focus on imperatives. An assignment to describe a significant person then generates sentences of all types to complete the first half of the course, on sentence constituents and structure.

This method of teaching is difficult. Students' experience of grammar instruction has been with prescriptive grammar, a presentation of English syntax which implies that all of the questions have been answered and everything is known. And they expect me to do the same, even if I have an unusual approach. However, since I don't know what students are going to propose, I may often be put in the position of saying, "That's an interesting way to analyze the sentence, but I honestly don't know if there will be problems with that later."

But I must teach in this way if I want students to learn and retain what they learn. In addition, this is more honest. Grammarians are unable to agree on how to analyze English; there simply is no "correct" way to do so. The number of basic sentence types in English varies according to the grammarian, from three (Weaver 1979) to seven (Quirk et al. 1985) to ten (Kolln 1990) to sixteen and more (Gleason 1967). If I force students to learn one model, I am doing them a disservice, particularly when there are other models available that might be more suited to any individual student's interests and perceptions.

Cognitive Dissonance and the Journals

Students' performance in the class is evaluated primarily through a series of analysis journals which they turn in regularly. After students have written a text and then analyzed it for some feature, they present an analysis of what they have found and illustrate it with examples from their writing; the last sections of the journal include a list of sentences which the student finds puzzling or cannot yet analyze confidently.

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[2] DeBeaugrande argued that "the grammar of talk contains all the categories needed for a grammar of writing" (1984:360). Here I am applying those ideas to a different context and might state my position in parallel terms: "the grammar of native-speaker-produced text, spoken or written, contains all the categories needed for use in a class studying the grammar/syntax of English as an academic subject."

The journals are an important tool in heightening disequilibrium for two reasons. First, through the list of sentences that cannot yet be analyzed, the student's attention is focused on areas that are not yet clear. Second, the journal allows for ongoing dialogue between professor and student; I can ask individual questions to push students further and draw their attention to discrepancies that they might not have noticed.

Spirals and the Journals

The journals are also a powerful method of building a learning spiral into the course. Students return to the same material week after week, refining their analyses; each text assignment will add new data to the corpus, and students will have to consider whether their analysis of the previous week is still adequate for the corpus. New sentences will require new analyses, and there may come for some students a point at which a whole new approach will be necessary. Each journal will be a chance for the students to represent what they have learned; then they will return to manipulate more data, and represent it again, in a spiral.

Depth and the Journals

We cannot hope to prepare our students for every kind of grammar they might need to teach in the high schools. Coverage of enough grammar to make them ready to step into all possible school systems--from those that teach absolute constructions in seventh grade to those that emphasize sentence combining based on transformational grammar--is clearly impossible.

The journals, however, also help students pursue depth rather than coverage. The goal of teaching the class as proposed here is not to let students know about all the possible syntactic structures of English; it is rather to help students create their own analysis of English that will allow them to refer to other grammatical descriptions of English that may be more complete. Students will be required to go as deep as necessary for their own texts; they will be allowed to add sentences from other texts to complete an analysis if they wish, but the course goal is to push them deeper into the structure of English.

Because students do have legitimate different interests in the course--those in elementary education are interested in grammar as it relates to whole language, for example, while the secondary education majors are more interested in grammar as it relates to the writing process--the course includes exposure to various applications of grammar, through a series of readings in professional journals. I also provide some exposure to various approaches to syntax (such as the classic transformational approach) so that students can see that their understanding of English grammar, based on their own writing and described in terms that they understand, enables them to read scholarly work within other frameworks. But the basis of the course is the students' own analyses of the grammar of English, not their ability to show familiarity with all theories or all issues.

Does It Work?

Teaching grammar by this method is obviously risky. Some students come to class with good memories of high school grammar and with the expectation that this class will be the same, probably an easy A. Others come with bad memories, but they may nonetheless not be ready for such a radically different approach; there is something comforting about an approach in which the teacher has all the answers and is ready to give them to the students.

More risky than this, though, is the fact that students are going to be working with their own writing. As the teacher I must be ready to deal with any sentence that comes up--even those that are puzzling to me. This approach requires that I too be willing to expose my own lack of understanding, that I too be ready to do extra homework to look things up.

But I believe that it is worth it. Not only do the learning theories predict that this method will work, but I have seen it. I see the advantages of this approach particularly in two areas.

First, students genuinely come to understand the problems of the traditional Latinate eight parts of speech. Nearly any textbook tries to make this clear to students, but--as Piaget and Bruner point out--students have to sense the dissonance for themselves. We can't force this conflict to occur according to our schedule by assigning a workbook exercise of sentences that lead to this conclusion. Each student must come to see it in his or her own time.

For some students, this occurs early in the course when we talk about direct objects. Most students remember the traditional, semantic definition--"the direct object receives the action of the verb." On what basis, I challenge them, do we declare there is action in the verb *resemble* but none in the verb *become*? Why is there a direct object in "John resembles his father" but not in "John became a doctor"? This may create enough conflict for some students to think more about traditional grammar.

For others, though, it takes much longer. One student, Tobey, did not agree that there was a problem with traditional definitions. He continued to think that I was making a big deal out of a few minor inconsistencies. Then, towards the end of the semester, we looked at the word *worth*, as in the sentence "It's worth three dollars." What part of speech is this?

Interestingly, grammarians and dictionaries do not agree. The *American Heritage Dictionary* calls this an adjective; it lists, as an example, "worth its weight in gold" and "a proposal worth consideration." *Webster's Ninth New Collegiate Dictionary*, on the other hand, calls it a preposition, with examples "well worth the effort" and "worth one's salt." Aarts and Aarts opt for adjective as well (1982:121); Quirk et al. put it in the group of "words which behave in many ways like prepositions, although they also have affinities with other word classes such as verbs or adjectives" (1985:667).

Now the problems of applying Latin parts of speech to English become obvious. In Latin there would be no question; if *worth* were an adjective, it would agree with a noun, and if it were a preposition, it would be invariable and would be followed by a noun in the ablative case. In English those criteria are irrelevant.

At this point Tobey agreed. In his journal he admitted, "Until this last week I thought that the traditional parts of speech were basically correct and you were just pointing out small problems. This week the class discussion finally convinced me."

Discovery for the Teacher as Well

Second, working with the students' own writing generates structures that I have never thought about before. Another student, Elizabeth, wrote this sentence in a composition for class: "I broke my shoulder three days before I was supposed to leave." She then asked me in her journal, "What is 'three days before I was supposed to leave'?"

I didn't know. In this sentence it is adverbial, and the whole phrase can be replaced by "before I was supposed to leave." But what seems to be the same construction can be used in other sentences, such as "I worried about it for three days before I was supposed to leave." Here the phrase--or at least part of it--is nominal, and "before I was supposed to leave" can be deleted or moved to the beginning of the sentence.

Students in a traditional grammar class can easily go through an entire semester without coming up against phrases which are not easily analyzed. The question Elizabeth raised is not discussed in most grammar texts which I know of; Quirk et al.'s massive volume mentions this as a modifier of *before*--but does not discuss the details of how subordinating conjunctions are modified (1985:1082). And that is one of the points of the class: despite the attitude of *Warriner's*, the grammar of English has not been completely described. Structures which native speakers use daily do not yield readily to analysis and perhaps haven't even been noticed. Using a textbook creates in students the opposite belief--that the analysis of English is set in stone, that the eight parts of speech will cover every situation, and that there are no surprises left.

Does grammar belong in the writing class? Noguchi and others have given us a good place to begin more profitable discussion of this. Does writing belong in the grammar class? The answer is surely yes, if we hope to teach grammar effectively.

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The Paragraph: Towards a Richer Understanding

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Paragraph analysis has typically proceeded by doing autopsies on polished final texts. In a fuller analysis, however, we must consider the choices the writer made before arriving at the final text. In this paper we examine a college student's paper, first examining an analysis based on vocabulary changes (Vocabulary Management Profile) and second referring to an interview with the writer about her paragraphing choices.

Since the fifteenth century, the practice of indenting the first sentence of some unit of text has been standard (Moran 1984:425). Thus we might expect that there is some accepted sense of what these units we call paragraphs are, and of how they fit into larger units of text--whole discourse.

Yet there seems to be no generally accepted definition of the paragraph at all. Even the simplest definition based on written text--"text occurring between two indentations," or, in other words, a paragraph is whatever the writer or editor marks as a paragraph--is not automatically accepted as useful or appropriate. And although rhetoricians might agree that we don't know as much as we should about paragraphs, there is no clear sense of how to proceed towards a deeper understanding.

We would like to propose that a richer understanding will result from looking at paragraphs from two more angles (besides the traditional approaches briefly summarized below). One is to apply a recent discourse tool, the Vocabulary Management Profile, to our understanding of paragraphs; the other is to look at paragraphs throughout the revising process and to interview writers about the role paragraphs play in their writing.

Rhetorical Theory from Bain to the Present

The history of paragraphs in rhetoric has been well described in Ned Shearer's article, "Alexander Bain and the genesis of paragraph theory," and in Paul Rodgers, "Alexander Bain and the rise of the organic paragraph." This traditional view centered on a prescriptive notion of paragraphs, although as Rodgers argues, Bain (writing in 1866) did not consider actual paragraphs at all, but developed his ideas from

> applying sentence principles to the paragraph.... All evidence suggests he formed his model of the paragraph deductively, first by assuming a close organic similarity between paragraph and sentence, then by applying to the paragraph the classical, sentence-oriented rhetoric he had inherited. (Rodgers 1965:406)

In the 1960's several articles in *College Composition and Communication* marked a shift in a focus, away from prescriptivism. Although some of these articles (such as Becker's) did focus on structural patterns in paragraph development, a more unusual point was made by Paul Rodgers: "Structure precedes... the indentation that marks [a paragraph's] physical limits.... Paragraphs are not composed; they are discovered" (Rodgers 1966:4-6). More radically, Leo Rockas believed that an indentation in the text was not determined by a unit, or organism, called the paragraph but could rather come before "almost any sentence of sophisticated prose" (Rockas 1964:6), and he used an essay by E. B. White to illustrate this assertion. Calling into question the notion of paragraph as a structural entity marked a shift away from a subject-centered view.

Another strand in paragraph analysis has focused on the role of indentations in providing cues to readers. This was noted in the earliest textbook devoted to the paragraph, Fred N. Scott and Joseph V. Denney's *Paragraph-writing* of 1891: "The indented lines serve as landmarks for the reader's eye, enabling him to find his place again if he should happen to turn aside for a moment" (Scott and Denney 1891:69). But the importance of this perspective was not developed; Scott and Denney in fact rejected it, calling it "manifestly inadequate" either "as a practical rule of composition or as an explanation of the phenomena of paragraphing" (p. 69).[1] Probably the most thorough attempt at reformulating paragraph theory around the expectations of readers, however, can be found in Eden and Mitchell's "Paragraphing for the Reader," which appeared in 1986. Stating that "The teaching of paragraphs needs a revolution," Eden and Mitchell argue for a "reader-oriented theory of the paragraph," based on "how indentions affect the reader's perception of prose discourse" (Eden and Mitchell 1986:416). They believe that most paragraph theories err in focusing solely on the text, ignoring the reader's experience. Thus, their theory of the paragraph stresses that "good paragraphs will have initial sentences which effectively orient the reader" (p. 428) and urges students to find "their own ways of meeting and working with the reader's expectations" (p. 429).

In general, analysts have not mentioned the role that a writer's own goals may play in paragraphing, seeming instead to assume what Robin Bell Markels states overtly in *A New Perspective on Cohesion in Expository Paragraphs*: the alternative to indentations based on subject matter is simply statements of "authorial whimsy" (Bell 1984:2). Those who have attempted to look at the writer's role include Michael Hoey, in a 1983 paper entitled "The Paragraph boundary as a marker of relations between the parts of discourse," where he stated that "Decisions on where to paragraph and interpretations of existing paragraph boundaries are made... depending on the rhetorical needs of the writer." And Rodgers argued that a writer's "decision to indent may be taken for any one (or more) of at least half a dozen different reasons" (Rodgers 1966:5).

Rockas and Rodgers did explore the possibility that authors had reasons for their own paragraphing, but they did not interview actual writers. Instead, working from finished texts, they could only offer guesses about why White and, in Rodgers's analysis, the essayist Walter Pater indented as they did. As Eden and Mitchell attempt to bring both reader and writer into the picture, they state that "strategically paragraphed prose... molds and shapes [a message] to achieve the writer's purpose" (1986:416). They too go on to hypothesize about a writer's decisions, looking at a passage from the historian Barbara Tuchman and offering guesses such as, "It is possible that Tuchman... goes through a... process of tinkering with order and placement" (p. 425). Thus in their thesis that "Paragraphing is not part of the composing but of the editing process" (p. 417), it is unclear whether this is a description of what successful writers do or whether this merely represents their ideas of what unsuccessful writers ought to do in order to become successful.

Discourse Studies and Written Paragraphs

The term *paragraph* is also used in linguistic studies on discourse, carried out by discourse analysts who have been working largely independently of rhetoricians. In these circles, there has been a tendency to dismiss the written paragraph as not relevant, or not necessarily relevant, to their analyses. Michael Hoey, for example, states in *On the surface of discourse*, "Historically, the paragraphs developed as a punctuation device. There is therefore no self-evident reason why sentences should join together into systematically organised units that coincide with the orthographic paragraph.... We cannot assume the natural divisions in a discourse to be those orthographically signalled" (Hoey 1983a:9-12). And Longacre offers this argument for not accepting indented paragraphs as discourse units:

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[1] This focus on readers led to research using actual readers to determine paragraph boundaries; the most famous experiments are those of Koen et al. 1969, Stern 1976, and Bond and Haynes 1984. These results, however, did not lead to a unified view on analyzing paragraphs from the reader's perspective.

> "Paragraph" is taken here to designate a structural rather than an orthographic unit. The paragraph indentations of a given writer are often partially dictated by eye appeal.... Conversely, a writer may put together several paragraphs as an indentation unit in order to show the unity of a comparatively short embedded discourse. Finally, the orthographic rule in English composition that we must indent for each change of speaker in a dialogue obscures the unity of dialogue paragraphs. (Longacre 1979:115-16)

This does not mean that there have been no discourse analyses which have looked at indented paragraphs. Even in these cases, however, the indentation is seen as a secondary signal; it merely reinforces the discourse unit which is already present. Brown and Yule, for example, after presenting a structural analysis of a passage of William Wharton's novel *Birdy*, then reveal that Wharton's indentations correspond exactly to their analysis (Brown and Yule 1983:97-99). Their conclusion is that the writer's indentations are one means of indicating topic-shift--but are typically reinforced by other linguistic features as well. Similarly, Youmans, in his study of several passages from James Joyce, deliberately limited himself to paragraphs which were "validate[d]... by joint evidence: paragraph breaks AND the principles" of various discourse analysts (Youmans 1992:763).

This mistrust of orthographically indicated paragraphs can probably be traced to the long-standing principle in linguistics that language is primarily spoken. Otto Jespersen, writing in 1924, states this principle clearly at the beginning of this classic *The Philosophy of Grammar*: "...the spoken and heard word is the primary form for language, and of far greater importance than the secondary form used in writing (printing) and reading" (Jespersen 1924:2). Because of this insistence on spoken language as being far more important than the written language, linguists have treated indented paragraphs in the same way that they have treated spelling and other conventions of written text: of some marginal interest, but not really relevant to the structure of the language.

Towards a More Realistic View

Based on this survey of discourse analysis and of rhetorical studies, we believe that composition teachers can move towards a clearer understanding of the paragraph in two important areas. First, we can become more aware of linguistic research in discourse structure; and second, we ought to consider more carefully the role of the writer in producing the text, seeking to understand how the indentations that exist in finished prose have come to be there.

To illustrate how these insights can give us a fuller understanding of paragraphs, we here present two analyses of a student final draft.[2] The student, Margie, was enrolled in a freshman writing course at Illinois State University and wrote this paper in response to the first assignment of the semester. All students of this course were interviewed immediately after completing the assignment, using a stimulated recall method. We chose Margie for this analysis because she was the only student who spontaneously began talking about paragraphs, and throughout the interview she referred to paragraphs several times. In fact, the last thing she said as the interview was drawing to a close, was, "At least I know how to make paragraphs!"

Margie's Text

The assignment students were given was to write about a significant person in their lives. The assignment was made on Monday, the first day of the semester; a rough draft was due on

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[2] For more information on the research methodology and results, see Meyer 1987.

Wednesday (but was not collected), and the final was due on Friday. Here is Margie's final draft:

> "One o'clock, the ghost isn't out. Two o'clock, the ghost isn't out. Three o'clock, the ghost isn't out... Twelve o'clock, midnight, the ghost is out tonight." When I think back at all the good times I had with Cathy, I remember how Cathy would get us, the neighborhood kids and I, all involved in the games: Ghost, Kick-the-Can, and Red Lion. The games gave me a sense of belonging and being part of a team. One lesson I got out of the games was the desire to be needed. Cathy has made me think about the direction my life will take through her teaching, her advice, and her leadership.
>
> In High School, I kept my distance from the people I didn't like because I was afraid they would make fun of me if I did something wrong. Later, when I went to visit Cathy, I saw her accomplishments: Pugwash at University of Illinois, great grades, and a job that she really enjoyed. At the beginning of the fall semester at Illinois State University, I became motivated from seeing her accomplishments to join some clubs: ARH, TTSA, and College Republicans. I believe a great part of my drive to success came from Cathy.
>
> Even though we are now far apart, she still finds a way to give me advice. Recently I received a letter from her. She told me that knowledge is learned, but wisdom is the processing of knowledge to make an educated opinion. Her advice relates to the problems I have with arguments. People can get into some bad arguments if they don't know what they are talking about. I enjoy hearing from her because I can learn a lot from her advice.
>
> When I was younger, Cathy would babysit us, my brother and I, on New Year's Eve. First, we climbed into bed about three hours before midnight. Then, Cathy woke us five minutes before midnight so we could welcome in the New Year together.
>
> Cathy is a very important part of my life. Most of my strength to become what I want to comes from her teachings, her advice, and her leadership.

A Vocabulary Management Profile Analysis

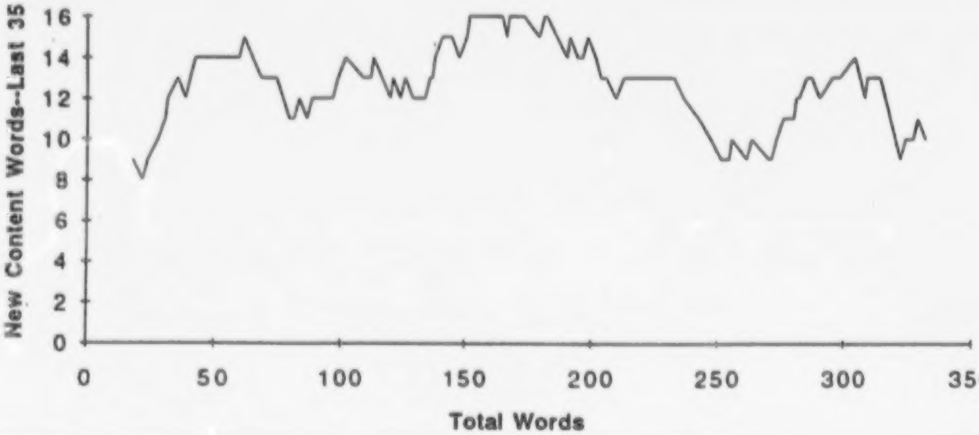
The discourse analysis technique which we present here is relatively new and is based quite closely on the vocabulary of a text. This technique, developed by Gilbert Youmans, is based on the assumption that found that "the simplest possible binary distinction between words in a text is the contrast between new and repeated vocabulary" (Youmans 1992:129). From this base Youmans has created the Vocabulary Management Profile (VMP), a computer program designed to analyze the occurrence of new words in a given text.

Youmans has produced several VMP programs, but this article will make use of one we will refer to as VMP Content. Taking one 35-word interval of text at a time, VMP Content counts the number of "content words" in the interval which occur for the first time in the text, and plots that number at the midpoint of the interval. "Content words" are considered any words excluding the 200 most common function words (and, but, or, etc.--these are counted as repeated rather than new as they occur in the text). The first interval occurs in words 1-35, the second in 2-36, and so on. As Youmans explains, "This procedure generates a curve, the VMP, which is a moving average of the number of new (content) words introduced over successive 35 word intervals" (Youmans 1992:129).

Increases in new words cause "peaks" on the VMP graph, while decreases in new words occurring correspond to "valleys" in the graph. Youmans notes that "an upturn in the curve... signals an increase in new vocabulary at the end of the interval, whereas a downturn signals an increase in repetitions" (Youmans 1991:765). As the text progresses, writers will generally present ideas, expound on them and then move on to something new. Most VMP graphs reflect this varied word usage, producing a curve which can rise and fall drastically at times; at the end of a paragraph, relatively few new words are introduced, producing a valley in the VMP graph; at the beginning of a new discourse unit, or paragraph, the rate at which the author uses new words increases, producing a peak. In Youmans's analyses of an essay by George Orwell and fiction by James Joyce, he found that "VMPs correlate closely with constituent structure and information flow in discourse" (Youmans 1991:788).

Using Youmans's VMP program, we attempted to discover how well the VMP graph would correspond to paragraph indentations in Margie's text. The text contains five paragraphs with a total length of 337 words. Paragraph endings occur at words 92, 185, 266, 310 and 337, respectively. Figure 1 is the VMP chart, which plots the number of new content words over a given 35-word interval versus the total number of content words in the text. A quick glance at the chart immediately reveals that the paragraph endings do not directly line up with distinct valleys, as we had hoped. Several prominent drops do occur, along with several shorter upswings, but a closer, more methodical look is needed to discover just what the VMP is showing in relation to the text.

Figure 1: VMP Curve of Margie's Text



Beginning with ¶1, an immediate dip in the curve down to 8 new words is, while unexpected, quite explainable given the opening format which Margie uses. Her first three sentences involve the repetition of the phrase "(one/two/three) o'clock, the ghost isn't out." This, while an unusual manner of beginning a paper, does explain the corresponding dip in the VMP curve. The program encounters more repeated words than normal as early as the second sentence, and the chart reflects it. The VMP curve for the rest of ¶1 gives more promising results. From the first valley--a valley where the vertical axis value is eight at word 22, henceforth V8,22--the curve rises rather smoothly to a peak of fifteen at word 62, or P15,62, then descends again to a shallow valley at the paragraph ending V12,92 (though it does hit V11 twice just before the paragraph ending).

Paragraph two presents a different scenario, because no prevalent peaks or valleys occur in the VMP curve. In fact, new content words show only a small increase, from 12 to 16 by word 152, where the curve plateaus over the last 30 words of the paragraph. To find an explanation, we again look to the actual text. The paragraph opens with Margie referring to her high school experience, and then describing some of the things she admired about her friend, Cathy. This corresponds to the gradual rise in the curve, as new content words reach 16 by the beginning of the following sentence. However, instead of bringing the paragraph to some closure, perhaps by summarizing what Cathy meant to her, Margie decides to bring up further examples of how Cathy inspired her. She lists several previously unmentioned clubs Cathy belonged to while at the university. Not surprisingly, the curve plateaus as new content words hold between 15 and 16 for the remainder of the paragraph.

Probably the most characteristic aspect of ¶3 is the consistent repetition of certain words and phrases throughout. With this in mind, the fact that the VMP curve drops from P15,192 to V9,262 by the end of the paragraph, comes as no surprise. Margie ends sentence one with the phrase "she still finds a way to give me advice." She again refers to "her advice" three sentences later, and ends the paragraph with a phrase not so different from the first: "...because I can learn a lot from her advice." The final usage of *advice* comes only 4 words after the valley at V9,262. Other cases of ¶3 repetition are found with the words *arguments* (2 occurrences) and *knowledge* (2).

While reasons for the downward slope of the curve are evident, these examples still do not account for the lack of an upswing in the VMP curve at the beginning of the paragraph. One explanation is that even the majority of words occurring in the first sentence are previously repeated in the text--words such as *advice*. More obvious, perhaps, is the fact that the VMP curve is already at a peak to begin with. In fact, the curve never rises above P15 after the word *apart* (¶3, sentence 1). The highest new-content-word count in the text is 16, thus for the curve of ¶3 to rise any more would perhaps be more unusual than if it fell, given its starting position.

Starting at V9,271, the curve for ¶4 rapidly climbs to 13 new content words and remains there after briefly ascending to a peak at *welcome* (P14,305). It is interesting to note that Margie here is bringing up another example from her childhood, probably from roughly the same time as ¶1. However, the content is entirely different--she talks of "New Year's Eve" and how she "climbed into bed about three hours before midnight" to rest before welcoming in the new year. Neither the event of New Year's Eve nor any vocabulary associated with bed and nighttime occurs in the text before ¶4. This influx of new content words associated with a new textual example once again explains why the VMP rises. But the briefness of the example, only two sentences with no summary or any placing of the example into a larger context, means that there is no valley at the end of the paragraph.

The results obtained from ¶5 are probably the most easily explainable of all segments of the VMP curve for Margie's final draft, due to the method by which Margie chose to conclude her paper. The entire paragraph consists of only two sentences: "Cathy is a very important part of my life. Most of my strength to become what I want to comes from her teachings, her advice, and her leadership."

Noticeably, *important* is the only new word contained in the first sentence, and from there the curve plummets to a valley only eight words later at *strength* (9,323). The concluding sentence is primarily a repetition of the last sentence in ¶1, with the final phrase differing by only one letter--the *s* in *teachings*. No upswing in the curve occurs, yet given the content, none is to be expected.

What has the Vocabulary Management Profile shown about Margie's draft and her use of paragraph indentations? And what are its limitations?

It is clear that the VMP shows something helpful about the text it is based on. In the case of Margie's paper, for example, the lack of VMP valleys at the end of paragraphs corresponds to the lack of closure. In Margie's second paragraph, for example, rather than returning to the idea that she had problems with people she didn't like, she ends with a list of activities that she was involved in and attributes her success to Cathy's influence.

On the other hand, the VMP cannot distinguish between genuine development/closure and simple repetition. The fact that the last sentence of the first paragraph and the last sentence of the last paragraph are nearly identical causes the VMP curve to drop at the end of ¶5, but these results would obtain if any sentence, no matter what its content, were repeated.

It is apparent that the VMP cannot be used as the sole measure of rhetorical effectiveness. It is a simple program which looks at an individual word and decides whether it is new or repeated--and nothing more. It can tell nothing about how a word fits into the context of a sentence, or whether a sentence "flows" well stylistically. Looking again at Margie's draft, she ends both ¶1 and ¶5 talking about *teaching* and *advice*. Yet nowhere in the paper is any distinction made between the two. ¶3 is devoted in a roundabout way to her friend's advice, but the last sentence of the opening and closing paragraphs is the only place where anything about teaching is mentioned. Both references to teaching are either unnecessarily redundant or grossly underdeveloped, yet they still affect the shape of the VMP curve. Thus while the VMP will show where certain words are used in a text, it cannot say anything about how they are used.

From the text Margie seems to be using *teaching* and *advice* as two different characteristics of her friend. In another context, of course, these words might be treated as synonyms. However, the VMP cannot distinguish between these two cases.

If the effectiveness of the VMP program is marginal in relation to certain areas of text analysis, it can prove to be a helpful tool if used in the proper context. It provides insight into information flow--the use of new and known information as measured by vocabulary. It seems a promising area for discourse analysis and thus provides a view of paragraphs which complements traditional rhetorical perspectives.

The Writer's Perspective: Information from the Drafts and from an Interview

The second perspective that we propose for richer understanding of paragraphs is the perspective of the writer through the writing process. Simply looking at Margie's drafts (she wrote four, although only two were required) gives us additional insight into the role paragraphs play in her writing and into the factors that are uppermost in her mind as she revises.

During the interviews the first question we asked all students was simply, "How did this writing go?" Margie mentioned paragraphs right away: "It was kind of difficult at first.... I usually like to start things, I start like a paragraph and then I go on to another paragraph. I just like to work that out first." As we followed up on her answer, we asked her, "What's the first thing that you try to work out?" She answered, "The paragraphs."

Margie is also unusual in the group of writers because of the number of drafts she wrote. All students were required to write two drafts as part of the assignment, and most students wrote only two; Margie wrote four. Margie's first draft contained only two paragraphs. This was, she said, part of her strategy for writing; she wants to "work out" the paragraphs first: "I only started out with two paragraphs, and then I went on with my second draft a little further." These are her first two paragraphs, her entire first draft (the first lines are the refrain of a chant associated with a childhood game she remembers):

> One o'clock, the ghost isn't out. Two o'clock, the ghost isn't out. Three o'clock, the ghost isn't out.... Twelve o'clock, midnight, the ghost is out tonight. When I think back at all the good times I had with Cathy, I remember how Cathy would get us all involved in the games. In High School, I didn't get too active, keeping my distance from the people I didn't like. For the first time since then, I have the motivation to join some clubs. I believe a great part of my drive came from Cathy because I see what she accomplished: Pugwash at U of I, high grades, a good job after school.

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> Before break, I wrote Cathy a letter, explaining my reason for craving to learn about issues. After break, I found her letter in my mail box. She responded with, "You are right that you need knowledge and wisdom to tackle the type questions you are beginning to become interested in. Just don't confuse the two concepts."

Margie's second draft shows her both working on these two paragraphs and going "a little further." These first two paragraphs are revised, but they are clearly the same paragraphs:

> One o'clock, the ghost isn't out. Two o'clock, the ghost isn't out. Three o'clock, the ghost isn't out.... Twelve o'clock, midnight, the ghost is out tonight. When I think back at all the good times I had with Cathy, I remember how Cathy would get us, the neighborhood kids and I, all involved in the games: Ghost, Kick-the-Can, and Red Lion. The games gave me a sense of belonging and being part of a team. One lesson I got out of the games was the desire to be needed. In High School, I kept my distance from the people I didn't like because I was afraid they would make fun of me if I did something wrong. For the first time since my graduation, I became motivated from seeing her accomplishments to join some clubs: A.R.H., T.T.S.A, and College Republicans. I believe a great part of my drive to success came from Cathy because when I went to visit Cathy, I see what she accomplished: Pugwash at U of I, great grades, and a good job after school.
>
> Even though we are far apart, she still finds a way to give me advice. Recently, I received a letter from her. She told me that knowledge is learned, but wisdom is the process of knowledge to make a educated opinion. I enjoy hearing from her because I can learn a lot.

After she had revised these two paragraphs, Margie went on with two new paragraphs: one is about Cathy's babysitting for her on New Year's Eve, and the other is a conclusion.

Margie's revision of the first paragraph included adding more description of the games she played when she was young, an explanation of the importance of these games, and more details of clubs Cathy is in now; she also added a transition to the second paragraph. The second paragraph shows a more significant change: Margie explained the difference between knowledge and wisdom in the second draft. These changes are apparently what Margie means by "working out" the paragraphs.

After Margie had written the second draft, she asked a friend to read it and comment on it. On the copy of the second draft a paragraph mark had been added between "Red Lion" and "In High School." When we asked Margie why she had decided to add an indentation at this point, she said, "That was advice." Her friend had pencilled in the paragraph mark as she was reading the draft.

We asked Margie why she had taken her friend's advice. At first she seemed surprised by the question, but then answered, "Because I wanted to start on a new idea.... That was about games and this is about my success and things like that, my impressions and her impressions, they're two different things really." And once Margie decided to take her friend's advice and indent, she did not change this indentation again. She added two sentences to the end of the first paragraph, but in both the third draft and the fourth and final draft, the second paragraph begins with the sentence "In High School, I kept my distance from people I didn't like."

Towards a Richer Understanding

For Margie, these new perspectives take us towards an understanding of why her paragraphs are unsatisfactory: the VMP shows that they tend to lack closure or to have artificial closure. The interview showed us that Margie did rely on reader feedback in paragraphing: there is some sense in which paragraphing *is* part of editing for her, as Eden and Mitchell argue it should be. We saw that some of Margie's indentations stayed the same throughout the writing process, but others were added as she revised. And we learned that she thought she knew everything there was to know about paragraphs: "At least I know how to make paragraphs!" If we as teachers are to help Margie, we must first understand that she needs to be convinced of her need for instruction.

To date, composition teachers' understanding of paragraphs has been based on traditional patterns of development and on reader expectations. We propose here, however, that increasing the lenses through which we look at paragraphs will lead to a deeper and richer understanding of paragraphs. Recent linguistic work in discourse analysis, using tools such as the Vocabulary Management Profile, and process-centered composition research, including examining drafts and interviewing writers--as well as other perspectives still to be applied to paragraphs--can only make our comprehension more complete.

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The Existential Use of Positional Verbs in Texmelucan Zapotec[1]

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In Texmelucan Zapotec there is no single verb with just an existential meaning. Rather, eleven positional verbs cover the same range of meaning that one verb covers in other languages. Each of these eleven verbs may occur as predicate of the locative clause, the existential clause or the possessive clause, and none of them occur as predicate of the attributive clause or of the identifying clause. This article explores the syntax of clauses determined by these predicates and the semantic parameters by which the Zapotec speaker controls their use. The results are then compared with what is known about existential verbs universally.

1. Introduction

Although it is common in languages for the same verbs which predicate existence to occur in copulative constructions, linguistic semanticists point out that these two categories are semantically distinct.[2] In fact, this distinction is maintained by the grammars of many languages, including Texmelucan Zapotec (TZ).

Copulative verbs are words that are without semantic content, but which serve to carry tense or aspect. They are used to connect a nominal (in subject position) either with an adjectival complement which qualifies it, or with a nominal complement which determines its identity or class membership. In some cases the copula may be absent on the surface. The following examples illustrate copulative constructions of these types in TZ.

(1) ji rit yu
very skinny 3Mas
He is very skinny.

(2) yu re Bartol
3Mas there Bartolome
He is Bartolome.

(3) yu re tub mbekʸ škʸe'y
3Mas there one person San.Lorenzo
He is a person of San Lorenzo.

(4) yu re nak yu tub mbekʸ škʸe'y
3Mas there S-be 3Mas one person San.Lorenzo
He is a person of San Lorenzo.

(5) yu re guk yu president
3Mas there C-be 3Mas president
He was president.

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[1] Texmelucan Zapotec is spoken by about 4,100 people in the municipality of San Lorenzo Texmelucan, district of Sola de Vega Oaxaca. The phonological transcription follows the Americanist tradition and should be self-evident with the exception of the contrast between laryngealized vowels, V', and glottalized vowels, V?. I benefited greatly from discussions with my Zapotec teacher, Claudio Martínez Antonio and from comments on this manuscript by Stephen Levinsohn and Stephen Marlett. I use the following abbreviations: 1 - first person, 2 - second person, 3 - third person, Anim - Animal, C - Completive, Cmp - Complementizer, Emp - Emphatic, In - Inanimate, Mas - Masculine, Neg - Negative, P - Potential, Pl - Plural, Pp - Preposition, Pr - Progressive, S - Stative, Q - Question marker, U - Unreal, X - Clause boundary marker. When several words gloss a single morpheme, they are separated by a period. When a word is composed of several morphemes, their glosses are separated by a hyphen.

[2] Kahn (1966:247, 263) traces this distinction to John Stuart Mill.

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In the first three examples there is no copula. (1) illustrates a descriptive clause in which an adjective occurs as the predicate and there is never a copula.[3] (2) contains a clause which establishes the identity of the subject, and (3) illustrates a clause which establishes class membership of the subject. In clauses of these types the copula is optionally absent (as in (2) and (3)), but may be present as in (4). Indeed the copula must be present, as in (5), if these clauses are to be inflected for aspect. These sentences illustrate the defining features of copulative verbs: they are semantically empty, they link the subject with its adjectival or nominal complement, and they provide a place for tense or aspect markers.

Unlike copulative verbs, existential verbs are not semantically empty.[4] In TZ they are distinct from the copulative verb. In addition to predicating existence, in TZ they communicate information about the position, animacy and referentiality of the subject. Consider the following:

(6) `bzu     tub yu   bel`
`C-stand one 3Mas old`
There was an old man.

zu is one of eleven verbs which predicate existence in TZ. Most of these verbs have a primary meaning of position,[5] although this positional meaning is bled out in the existential predication. The verb zu, for example, normally indicates that the subject is standing, but in its existential use, as in (6), it does not carry any information about the subject's position. It is the only verb that can be used in the existential predication when the subject is animate and referential in a sense discussed below.

The purpose of this article is to investigate the existential use of these eleven positional verbs. In §2 I discuss the semantic parameters by which Zapotecs control the selection of these verbs. In §3 I characterize the syntax of clauses determined by these verbs. I discuss differences between the existential construction and other constructions. I also discuss the use of existential constructions to indicate possession. Finally, I discuss some special uses that these verbs have. The final section concludes this article with a discussion of how Zapotec fits the notion of what existential verbs are like in natural language.

2. Semantics

Existential verbs predicate existence in time and space (Kahn 1966:257-58) and thus often occur with a locative or temporal adjunct (Clark 1978:89). Time and location, however, may be implicit. Thus (7), which lacks locative and temporal adjuncts, is ambiguous.

(7) `a zu       uz     ru`
`Q Pr-stand father 2`
Is your father alive? (Do you have a father?)
Is your father here?

The first reading follows from understanding implicit time as being *now*. The second reading follows from understanding implicit location as being *here*.

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[3] In §3 I show that they determine a distinct class from verbs.

[4] Lyons 1968 and Clark 1978 view existential clauses, locative clauses and possessive clauses as being essentially the same. Since the grammars of many languages distinguish between existential clauses and locative clauses on the surface, Lyons uses traditional terminology. Clark uses Locational as a cover term for all three types. The grammar of TZ does not distinguish between any of these types. The same verbs, whose primary meaning is positional, are used in all three types of clauses.

[5] Each of these eleven verbs may indicate position. Such predications are not existential. The same verb may also indicate presence or absence, existence or nonexistence, or possession. Such predications are existential. The positional component of the meaning of the verb may be absent altogether, or it may contribute slightly to the interpretation of such clauses.

Eleven verbs occur in this type of construction. The selection of the verb is not arbitrary, but is determined by two types of lexical information. First, is the subject grouped or individuated?[6] zu is the appropriate verb for singular individual subjects. It is also appropriate when the subject is several individuals who are clearly identified.

(8) zu kʸup yu feñ nuy bikʸ yu
Pr-stand two 3Mas young and-3Mas brother 3Mas
There were once a young man and his brother.

If the subject is a group who members are not individually identified, however, yuʔ is the appropriate verb for the existential predication.

(9) a yuʔ famil nir
Q Pr-be.in family Pp-2
Do you have family?
Is your family here?

The second piece of lexical information that is needed to properly select the correct verb is the position of the subject. In the existential predication, this position is inherent, and does not necessarily coincide with the subject's position in the real world. For human subjects, only zu *stand* or yuʔ *be in* can be used in the existential predication. For inanimate subjects, there may be several choices, each slightly coloring the meaning of the predication. The following table gives the eleven existential verbs with their semantic correlates. The basic meaning of each verb is given in parentheses.

Table 1. Existential Verbs

		Individuated	*Grouped*
I.	*Position*	ka *be attached*	taʔ *be attached*
	attached		
	upright	zub *sit*	ŋgʷaˀ *be on*
	erect	zu *stand*	
	horizontal	mbiš *lie*	
	on top of	riˀb *be on*	
	inside of	ri *be in*	yuʔ *be in*
	suspended from	zaˀb *hang*	zaˀb *hang*
II.	*Animate* [6]	zu *stand*	yuʔ *be in*
III.	*Plant*	zub *sit*	naš *stick*

---

[6] 'Grouped' is the same as Givón's (1978) 'generic' or 'non-referential'. 'Individuated' is the same as his 'referential'. Referentiality is discussed in §3. I have avoided his terms before §3, because I think he uses them in a very specialized way. They could be confusing out of context.

Each of these predicates may be used with a locative adjunct in a clause that is not existential. Thus one may describe the location of a pencil that one wants to buy as follows:

(10) a. bi't lap nu ka lo gʸikʸ ze? nê
C-sell pencil Cmp Pr-be.attached face paper that Pp-1
Sell me the pencil that is on that card!

b. bi't de lap nu ta? lo gʸikʸ ze? nê
C-sell Pl pencil Cmp Pr-be.attached face paper that Pp-1
Sell me the pencils that are on that card!

c. bi't lap nu mbiš lo yu re nê
C-sell pencil Cmp S-lie face ground there Pp-1
Sell me the pencil that is lying on the ground here!

d. bi't lap nu ri'b lo mez ze? nê
C-sell pencil Cmp Pr-be.on face table that Pp-1
Sell me the pencil on the table!

e. bi't de lap nu ŋgʷa' lo mez ze? nê
C-sell Pl pencil Cmp S-be.on face table that Pp-1
Sell me the pencils that are on the table there!

f. bi't lap nu ri nañ bid nir nê
C-sell pencil Cmp Pr-be.in inside pocket Pp-2 Pp-1
Sell me the pencil that is in your pocket!

g. bi't de lap nu yu? nañ kah ze? nê
C-sell Pl pencil Cmp Pr-be.in inside box that Pp-1
Sell me the pencils that are in that box!

h. bi't tub lap nu za'b lo du' i'lʸ nê
C-sell one pencil Cmp Pr-hang face cord cotton Pp-1
Sell me the pencil that is hanging on that cord!

i. bi't de lap nu za'b lo du' i'lʸ nê
C-sell Pl pencil Cmp Pr-hang face cord cotton Pp-1
Sell me the pencils that are hanging on that cord!

The verbs in (10) are selected according to the position of the inanimate subject and whether the subject is grouped or individuated. All of the verbs listed in the table are illustrated except for zu, zub and naš, since *standing*, *sitting* and *sticking* are not appropriate positions for a pencil. These are illustrated in (11).

(11) a. bi't trapič yag nu zub re nê
C-sell cane-press tree Cmp Pr-sit there Pp-1
Sell me the wooden cane press over there!

b. bi't mulʸ nu zu re nê
C-sell mule Cmp Pr-stand there Pp-1
Sell me the mule standing over there!

c. bi't yag nu naš re nê
C-sell tree Cmp S-stick there Pp-1
Send me the tree that is over there!

None of the clauses in (10) and (11) is existential. Rather, they assume the existence of the subject. It is not always easy to distinguish between existential and non-existential clauses, but there are differences in meaning and syntax that require the distinction to be made. The syntactic differences are discussed in §3.

Semantically, the existential predication can occur without a locative adjunct and without communicating anything about the position of the subject in the real world. For example, (12) tells nothing about the exact location or position of the pencil.

(12) a mbiš tub lap kut ru nẽ
Q S-lie one pencil P-sell 2 Pp-1
Is there a pencil that you could sell me?

The speaker cannot assert the exact location of the pencil because he has made no commitment as to its existence. Consequently, the use of these positional predicates is more restricted in the existential predication. Most of the verbs of (13) are totally inappropriate in the existential clause with the same subject.

(13) $*a \left\{ \begin{array}{l} \text{ta?} \\ \text{ka} \\ \text{ri'b} \\ \text{za'b} \end{array} \right\}$ lap nu kut ru nẽ
Is (are) there pencil(s) that you could sell me?

The pencil in question may very well be lying on a table, clipped to a card, or hanging from a string, but since the speaker is questioning its existence, he does not assert its position. Since the inherent position for *pencil* is horizontal, he must use the verb mbiš. Thus, the selection of existential verbs is to some extent independent of the position the nominal subject may have in real life.

When these predicates occur with explicit location in the existential clause, they may indicate the position of the subject in the real world, as in (14).

(14) yu? ru? lap nañ kah re
Pr-be.in still pencil inside box there
There are still pencils in that box.
The pencils are still in the box.

Sentence (14) is ambiguous as to its predication. The first reading is existential. It asserts the presence of the pencils. The second reading is non-existential. It asserts the position of the pencils. A syntactic test for this distinction is presented in §3.

When several positional verbs can occur with the same noun, different options carry with them fine nuances of meaning that arise from the primary meaning of the verbs. The following example illustrates differences in referentiality:

(15) a. yu? tiñ rikã nir
Pr-be.in money P-give-1 Pp-2
There is some money I could give to you (a lot).

b. ri tiñ rikã nir
Pr-be.in money P-give-1 Pp-2
There is some money I could give to you (a small amount).

(15a) refers to a 'group' (quantity) of money. (15b) refers to several individual pieces of money. The next example illustrates differences in referentiality and position.

(16) a. mbiš manjik nẽ
S-lies machete Pp-1
I have a machete (to work with).

b. yu? manjik nẽ
Pr-be.in machete Pp-1
I have machetes (to sell).

(16a) refers to one or two machetes that are out in the open. (16b) refers to a group of machetes in storage. The next examples illustrate differences in position.

(17) a. a ta? laž kut ru dő?
Q Pr-be.attached orange P-sell 2 P-drink-1
Are there any oranges (on the tree) you could sell me to drink?

b. a yu? laž kut ru dő?
Q Pr-be.in orange P-sell 2 P-drink-1
Are there any oranges (in the house) you could sell me to drink?

(18) a. zu tub kʷay bikʸ lʸuč
Pr-stand one horse mountain pointed
There is a (live) horse at Pointed Mountain.

b. mbiš tub kʷay bikʸ lʸuč
S-lie one horse mountain pointed
There is a (dead) horse at Pointed Mountain.

(17a) refers to oranges attached to the tree. (17b) refers to oranges in storage. (18a) refers to a live animate horse. (18b) refers to a dead horse. Thus, both position and referentiality color the meanings of the predications.

The following are some examples of the existential use of the positional verbs presented in Table 1.

(19) a. zub tub yu? par ju
Pr-sit one house to side
There is a house across the way.

b. ta? za? na
Pr-be.attached fresh.corn now
There is fresh corn (in the field) now.

c. naš ya maŋg škʸe'y
S-stick tree mango San.Lorenzo
There are mango trees in San Lorenzo.

d. zub kʸup yu? wej škʸe'y
Pr-sit two house church San.Lorenzo
There are two churches in San Lorenzo.

e. yu? de fuštiz
Pr-be.in Pl authorities
The town authorities are in (their office).

f. ŋgʷa' libr nañ yu?
S-lie book inside house
There are (a few) books in the house.

g. yu? ri'ñ lola?
PR-be.in work Oaxaca
There is work in Oaxaca.

h. za'b bjij tiem na
Pr-hang pineapple time now
At this time of year there are pineapples (on the plant).

In summary, an inherent position is associated with every noun. The inherent positions of pencils, for example, are 'horizontal', or 'inside of'. Although a pencil may occur in other positions in the real world, in the existential predication the only verbs that can be used with it are those that conform to its inherent positions. Several positional verbs can be used for some nouns. In those cases, the primary meaning of the predicate influences the meaning of the existential predication.

3. Syntax

In this section I show that the existential construction differs syntactically from other constructions with the same positional verbs in two ways: in the way in which they are negated, and in their permitting an indirect object. Then I describe some miscellaneous constructions in which positional verbs occur. Existential verbs from other languages typically occur in similar constructions.

3.1. Negation

Existential clauses differ from other clauses in the way in which they are negated. Three morphemes negate predicates of independent clauses. sak is the negative existential; it substitutes for each of the eleven existential verbs in the negative existential predication. â? negates the predicate adjective. The prefix wa- negates all other predicates. Examples (20-22) illustrate these three negative morphemes.

(20) a. a mbiš manjik nir
Q S-lie machete Pp-2
Is there a machete here?

b. sak ñi
Neg 3In
There isn't one.

(21) a. a ri?ñ manjik nir
Q sharp machete Pp-2
Is your machete sharp?

b. â? ri?ñ ñi
Neg sharp 3In
It is not sharp.

(22) a. a bzab manjik nir lo gʸita?
Q C-jump machete Pp-2 fact rock
Did your machete bounce on the rock?

b. wansab ñi
Neg-P-U-jump 3In
It didn't bounce.

Thus, in independent clauses, existentials are negated in a different way from both non-existentials and adjectivals. This contrast helps to distinguish between the two readings of (14), which is repeated below.

(14) yu? ru? lap nañ kah re
Pr-be.in still pencil inside box there
There are still pencils in that box.

The pencils are still in the box.

(14) is ambiguous in the affirmative, but not in the negative.

(23) a. sak ñi
Neg 3In
There aren't any.

b. wagʸu?ñ
Neg-P-be.in-3In
They are not inside (but somewhere else).

(23a) is the negative of the existential reading. (23b) is the negative of the non-existential reading.

Two morphemes negate predicates of dependent clauses. â? negates a dependent predicate adjective. kʷe? negates other dependent clauses. (kʷe? is also the negative imperative.)

(24) bikʸna nu â? ri?ñ manjik nir
if Cmp Neg sharp machete Pp-2
If your machete had not been sharp, it would not

orze? wakʸug ñi bilʸ nu bru' lor
X Neg-cut 3In snake Cmp left face-2
have cut the snake in two that appeared before you.

(25) bikʸna nu kʷe? mbiš manjik
if Cmp Neg S-lies machete
If there had not been a machete,

orze? warugʸu?n gʸiš nir
X Neg-clean bush Pp-2
your fields would have not been cleaned off.

(26) bikʸna nu kʷe? nzab manjik nir lo gʸita?
if Cmp Neg U-jump machete Pp-2 face rock
If your machete had not bounced off the rock,

orze? waši?ñ ru ub ru
X Neg-cut 2 self 2
you would not have cut yourself.

Thus, in dependent clauses, existentials are negated in the same way as non-existentials, but in a different way from adjectivals.

3.2 Indirect Object

None of the eleven verbs in Table 1 subcategorizes for indirect object under its primary meaning. However, each can occur with an indirect object under the existential meaning indicating possession. (27) illustrates this construction:

(27) mbiš manjik nẽ
S-lie machete Pp-1
I have a machete.

nẽ is a contraction of the preposition ni and the first person bound pronoun -ã. ni occurs before possessors in the noun phrase, and before indirect objects and benefactives at the clause level. Since pronouns cannot be modified by a possessor, (28a), replacing manjik with a pronoun, (28b), shows that nẽ is not possessor in the noun phrase, but indirect object, a clausal constituent.

(28) a. ra's čẽ? nẽ
Pr-sleep dog Pp-1
My dog is asleep.

*ra's ma nẽ
Pr-sleep 3Anim Pp-1
Mine is asleep.[7]

b. mbiš ñi nẽ
S-lie 3In Pp-1
I have it.

Many languages express possession with structures of this type. Clark suggests that they should be understood as having an animate location (1978:89). Existential constructions of this kind are the most common means of indicating possession in TZ.[8] They help to distinguish the existential use of the positional verb from the non-existential use which cannot occur with an indirect object.

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[7] Possessors also do not occur in headless noun phrases. The closest thing I have seen to the English word *mine* is koz nẽ *my thing* even when its referent is human. I once heard a man say about his wife, ɸiñ ze? koz nẽ *That young woman is my thing*.

[8] The only other expression for indicating possession is the idiom gʸikʸ kup. gʸikʸ is the verb *do, cause*. I think kup comes from čup *climb* which is also used to mean *become affluent*.

3.3 Miscellaneous facts

In many languages, existential predicates are used as auxiliary verbs, often with an aspectual meaning. In TZ, za'b occurs as part of the verb phrase meaning *continually*.[9] za'b is not inflected for aspect and is not followed by a subject pronoun.

(29) a. za'b rikʸ lay ri'ñ
Pr-hang do Emp-3Mas work
He continually works.

b. za'b bikʸ lay ri'ñ
Pr-hang did Emp-3Mas work
He continually worked.

The existential verb yu? occurs in a cleft construction.

(30) yu? mbekʸ nu nap rikʸ yu
Pr-be.in people Cmp good Pr-do 3Mas
There are people who do good.

Note the resumptive pronoun, yu, in the embedded clause. This distinguishes it from a relative clause which would have a gap in that place.

(31) mbekʸ nu nap rikʸ
people Cmp good Pr-do
people who do good

Finally, yu? occurs in a special construction with a sentential subject meaning *at times*.

(32) yu? nu nap rikʸ mbekʸ
Pr-be.in Cmp good Pr-do person
At times people act good.

In summary, positional verbs occur as predicate of two distinct clause types. One clause type is non-existential and is syntactically like all other clauses with intransitive verbal predicates. The other clause type is existential and has a distinct syntax from the non-existential type. The existential clause type differs from the other clause type in that it is negated differently, it can often occur without a locative adjunct, and it can occur with an indirect object which is semantically a possessor. The non-existential clause with the same positional predicate usually occurs with a locative adjunct and does not occur with an indirect object. Positional verbs are also like existential verbs in other languages in that they occur in some special constructions where existential verbs typically occur.

4. Universal Perspective

The discussion of the TZ copula and existentials presented here follows a framework that draws from Lyons (1967; 1968). This framework was applied by Eve Clark in 1978 to a sample of thirty languages. She argues that Lyons is right in relating so-called locative, existential and possessive clauses. She notes certain recurring patterns, and gives functional explanations for some of them. I begin this section by reviewing aspects of this framework. I relate TZ positional verbs to it. Then I discuss how TZ relates to some of Clark's results. I conclude by relating the notions grouped and individuated to Givón's work on definiteness and referentiality.

In discussing the different uses of the verb *to be* in English, Lyons relates the clauses in (33) and distinguishes them from the clauses in (34) and (35).

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[9] In many dialects of Zapotec a distinct progressive aspect is marked by ka which looks like the positional verb *to be attached*. In TZ most verbs do not have a distinct progressive aspect. For those verbs that do, it is distinguished by the lack of an aspectual prefix.

(33) a. The fox is in the field. *(Locative)*
b. There is a fox in the field. *(Existential)*
c. The book is mine. *(Possessive)*

(34) The book is a novel. *(Identifying)*

(35) The book is black. *(Attributive)*

(33a) differs from (33b) in definiteness of the subject. (33a) and (33b) differ from (33c) in animateness of the locative. Each of the clauses in (33) predicates the existence of the subject in time and space. So I refer to them collectively as the existential construction. The predicate of the existential construction differs from the copulative predicates in (34) and (35) in that copulas are semantically empty and serve primarily to carry tense.

Most of the languages in Clark's sample reflect this framework only in part. The same verb is used for the locative, existential and possessive clauses in only about half of the languages. The copula is the same as at least one predicate of an existential construction in most of the languages. Only Yurok and Turkish use one verb for existential, locative and possessive clauses and a distinct verb for the copula. TZ is like these languages. The attributive construction, the identifying construction, and the existential construction are all distinct.[10]

Adjectives are distinct from verbs in TZ. Like verbs, they occur as the predicate of a clause. Unlike verbs, they are not inflected for aspect. They require a different negative than verbs. They occur with different derivational prefixes than verbs. The tonal changes associated with them are different from those associated with verbs. However, they never occur with a copula. So clauses with adjectival predicates are distinct from clauses with nominal predicates and clauses with verbal predicates.

Nouns occur with the copula -ak. As in many other languages, the grammar of TZ does not distinguish between nouns which indicate identity and those which indicate class membership or class inclusion. Also, as is common in other languages, the noun may occur as predicate without the copula with a present interpretation.

In TZ there is no single verb with just an existential meaning. Rather, eleven positional verbs cover the same range of meaning that one verb covers in other languages. Each of eleven verbs may occur as predicate of the locative clause, the existential clause, or the possessive clause. Clark claims that it is common for languages to use inherently locative verbs in existential constructions (1978:102). She cites languages that use such verbs as *lie*, *sit*, *stand*, *dwell*, *be at*, and *find*. TZ uses some of these same verbs. However, unlike any language in Clark's sample, TZ uses eleven such verbs in the existential construction.

Clark also claims that it is common for a special negative verb to be used in existential constructions (1978:105). In TZ each of these eleven verbs in the existential clause is negated by replacing it with a single negative verb, sak *not any, not here, not have*. When the same verbs occur in a non-existential clause, they are negated by attaching the prefix wa- to the stem of each verb: wa-STEM *not (on, in, standing, attached to...)*. wa- occurs with all other verbs in independent clauses.

In the TZ existential construction each of these eleven verbs may occur with an indirect object indicating possession. Clark claims that this is a common pattern. She says that the possessor usually has the syntactic form of the indirect object, a clausal constituent, or of the noun phrase possessor (1978:115).[11]

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[10] Clark found insufficient evidence to decide for two more languages: Burmese and Chuvash. However, since she does not distinguish between types of copulas, it is hard to know if any of the languages in her sample make the same distinctions TZ makes.

Existential verbs and copulas often occur as auxiliary verbs and in cleft constructions. In TZ positional verbs are the only ones that occur in similar constructions. The copula never does. This is not surprising since the copula is semantically empty. TZ auxiliaries have an aspectual meaning.

Finally, there is the well known distinction between the English locative clause (33a), with definite subjects, and the existential clause (33b), with indefinite subjects, which is sometimes described as having undergone indefinite extraposition. Word order differences between clauses of the existential construction based on definiteness are claimed to be very common in the world's languages. Clark (1978:88) attributes this difference to the universal tendency for indefinite nominals to occur late in the sentence[12]. In fact, she points out that for some languages word order is the primary indicator of definiteness. It does not indicate definiteness in TZ, however. TZ has definite markers in the noun phrase. `tub` *one* occurs before the head noun as an indefinite marker. The demonstrative adjectives, `i'` *this*, `re` *there (close)*, and `ze?` *there (far)*, occur last in the noun phrase to mark definite head nouns.[13] TZ also has a highly constrained Verb-Subject-Direct Object-Indirect Object order. While a sentence constituent can be fronted, the semantic trigger for fronting does not seem to be definiteness. Note that (36) with an indefinite subject and (37) with a definite subject occur with the same word order.

(36) `bzu tub yu bel`
`C-stand one 3Mas old`
There (once) was an old man.

(37) `a zu uz ru` `zuy`
`Q Pr-stand father 2` `Pr-stand-3mas`
Is your father here? *He is here.*

`yu` *3mas* is a contracted pronoun and a sentence constituent. It is not fronted. Thus, the word order distinction illustrated by (33a) and (33b) for English does not exist for TZ.

Similarly, there is a universal tendency for animate nominals to be ordered before inanimate nominals (Clark 1978:101). This explains why most of the languages in Clark's sample have the possessor ordered before the possessed nominal. In fact, those languages that allow the possessed nominal to be ordered before the possessor all had the more expected word order as an alternative. In the existential construction in TZ, the possessed nominal, which is the subject, always occurs before the possessor, which is indirect object. This is because indirect objects occur after subjects and direct objects. Thus the grammatical relation a nominal bears is more important to word order than definiteness or animacy in TZ.

Another article, by Talmy Givón, from the same volume in which Clark's article appeared, provides a more complete account of definiteness. Givón shows that it is necessary to distinguish definiteness from referentiality in order to understand different ways in which languages encode these two concepts in the grammar. Definiteness is a pragmatic concept which refers to whether or not a noun phrase is new information in the discourse. Referentiality is a semantic concept which concerns how well a noun phrase identifies the thing it is referring to "within a particular universe of discourse" (Givón 1978:293). On the referentiality scale nominals may be either generic (or non-referential) or referential. About generic, Givón says, "the speaker is engaged in discussing the genus or its properties, but does not commit him/herself to the existence of any specific individual member of that genus." And, "one may, though, commit oneself to the existence/ referentiality of the genus itself within the universe of discourse" (1978:294). It is common for the same grammatical device to encode information about both referentiality and definiteness. Givón gives many examples. He also discusses one language, Bemba (Bantu), which encodes only information about referentiality in its articles.

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[11] This is my understanding of what she means when she says that they are usually in the genitive or dative case.

[12] Givón (1978:295) provides the same explanation.

[13] In Givón's frame work, discussed below, tub is used only for referential-indefinites, and `ze?`, `re`, and `i'` are used only for referential-definites.

Although TZ existential clauses differ from most languages in that they do not encode information about definiteness, they do seem to encode information about referentiality. Above, I showed that zu, which requires animate individuated subjects, can occur with both definite and indefinite subjects. Similarly, yu? requires animate grouped subjects. They can be definite.

(38) a yu? de ɸuštiz
Q Pr-be.in Pl authorities
Are the town authorities in (their office)?

yu?y
Pr-be.in-3Mas
They are in.

They can also be indefinite.

(39) a yu? [koyot] šk^{y}e’y
Q Pr-be.in coyote San.Lorenzo
Are there coyotes in San Lorenzo?

zu and yu? both occur with animate subjects. zu occurs with referential subjects. It clearly refers to specific individuals. yu? occurs with generic subjects. It refers to a genus and communicates no information about any individual members of the genus. The question (38) might be answered "*They are in,*" if any subset of the set of town authorities is in.

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Nontonal Floating Features as Grammatical Morphemes

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The concept of floating tones is no longer controversial in tonal analysis; important insights into the morphology of numerous tonal languages have relied on the positing of morphemes that are composed simply of prosodically unlicensed tones. Employing data from three of Africa's four major language families, this paper builds on this notion by recognizing the existence of nontonal floating features — morphemes composed solely of phonological features that have no segmental support. The first example, from Kanembu (Nilo-Saharan, Chad), shows that the [+ATR] feature is the sole marker of incompletive aspect in the verb. Again, in Mafa and Podoko (Chadic, Cameroon), certain aspects of the verb are marked by floating labial and palatal features. One of the noun class markers in Aka (Bantu, C.A.R.) consists only of the floating feature [+voice]. And finally, the marker of the completive aspect in Mokulu (Chadic, Chad) is a morpheme that is comprised simply of the feature complex [+voice] and [+high]. In conclusion, after noting that a similar floating feature analysis may be appropriate in other languages such as Ngbaka (Ubangian, Zaïre), we consider the general characteristics of floating features as full grammatical morphemes.

1. Introduction

The existence of floating tones is no longer controversial in phonological and morphological analysis. Abundant evidence has been advanced to show that the phonological structure of certain morphemes may consist of nothing more than a tonal feature (or a bundle of tonal features), without any segmental support, that is, not associated with any unit of the skeletal structure. These floating tones are manipulated by the phonological rules of the language, and are usually realized phonetically via an autosegmental association with the syllables of other morphemes in the environment. Furthermore, important insights into the morphology of numerous tone languages have relied on the recognition of such floating tones. Floating tone morphemes also provided important arguments for the appropriateness of autosegmental representations. The existence of such morphemes raises a theoretical question: are such phenomena limited to tonal features, such that this is a unique property of tone? We answer that it is not; tonal and nontonal features share more properties than some have assumed.

The present paper provides abundant evidence that a wide variety of *nontonal* phonological features by themselves constitute full morphemes, just like floating tone morphemes. These floating features are prosodically unlicensed, having no segmental support. They are manipulated in regular fashion by the phonological rules of the language and are realized by being associated with segmental units already existing in the skeletal structure of neighboring morphemes. Theoretically, this possibility comes as no surprise, since it is provided for within the current models of multilinear phonology. However, the existence of nontonal floating features has until now been largely ignored. This paper thus provides examples that may fill an empirical gap.

The evidence we present comes from a wide variety of languages, representing three of the four major African language families. The first examples are suggested by published descriptions, and the latter examples, from Aka and Mokulu, come from more recent unpublished research.

1. Kanembu

Our first example comes from Kanembu, a Nilo-Saharan language of the Saharan subgroup, spoken in Chad and Niger in the areas near Lake Chad. Jouannet (1982) reports that the difference between the completive and noncompletive aspects of the verb is marked by the quality of the vowels: the noncompletive form is characterized by tense vowels and the corresponding completive verb form by lax vowels. The two sets of vowels and their correspondences are given in Table 1. Note, however, that the central tense vowel ʌ (symbolized by Jouannet as ɘ) corresponds to the two lax vowels [ə] and [a]. Some examples of the relevant verbal forms that Jouannet cites are given in (1)-(4).

Table 1. Kanembu Vowels

Tense vowels:	i	e	ʌ	o	u
Lax vowels:	ɪ	ɛ	ə a	ɔ	ʊ

	Completive		*Incompletive*	
(1)	'gɔ́nəkɪ̀	*I took*	'gónʌkì	*I am taking*
(2)	'dálləkɪ̀	*I got up*	'dʌ́llʌ̀kì	*I am getting up*
(3)	dállə́'kɪ̀	*I soaked*	dʌ́llʌ́'kì	*I am soaking*
(4)	bàrɛ́nə́'kɪ̀	*I cultivated*	bʌ̀rénʌ́'kì	*I am cultivating*

These forms are composed of the verb root, inflected for completive or incompletive aspect, followed by the first person subject pronoun marker *-nəkɪ* or *-nʌki*. Note that this suffix harmonizes with the rest of the word in the quality of its vowels. (The tonal and accentual variations on the person marker suffix are determined by the verb root.)

Our interpretation of this data is that the completive is the unmarked aspect, and that the incompletive aspect morpheme is the floating feature [+ATR]. This feature spreads by a lexical rule to all the syllables of the word, including those of the suffix. When there is no [+ATR] feature present, the [–ATR] feature is filled in by a late rule. Compare the incompletive forms of examples (1) and (4) with their derivations, represented as (5) and (6). (Capital letters indicate vowels unspecified for the [ATR] feature.)

(5)
$$\begin{bmatrix}[+\mathrm{ATR}] \\ \\ \end{bmatrix}\begin{bmatrix} \\ \\ \mathrm{gO}\end{bmatrix}\begin{bmatrix} \\ \\ \mathrm{n\exists kI}\end{bmatrix} \rightarrow \begin{bmatrix}[+\mathrm{ATR}] \\ \ddots\ \ddots \\ \mathrm{gO}\ \ \mathrm{n\exists kI}\end{bmatrix}$$

(6)
$$\begin{bmatrix}[+\mathrm{ATR}] \\ \\ \end{bmatrix}\begin{bmatrix} \\ \\ \mathrm{bArE}\end{bmatrix}\begin{bmatrix} \\ \\ \mathrm{n\exists kI}\end{bmatrix} \rightarrow \begin{bmatrix}[+\mathrm{ATR}] \\ \ddots\ \ddots \\ \mathrm{bArE}\ \ \mathrm{n\exists kI}\end{bmatrix}$$

Similar patterns obtain with other person markers. Examples with *-i* (3rd person singular), *-yei* (3rd person plural), and *-nəmi* (2nd person singular) are given in (7)-(9).

	Completive		*Incompletive*	
(7)	ˈfáì	*he woke up*	ˈfʌ́ì	*he is waking up*
(8)	ˈgárcèì	*they encircled*	ˈgʌ́rcèì	*they are encircling*
(9)	ˈdárrə̀mì	*you strolled*	ˈdʌ́rrʌ̀mì	*you are strolling*

Jouannet notes two cases in which the distinction between the completive and incompletive forms of a verb is neutralized; such cases have the tense ([+ATR]) vowel pattern exclusively. This situation confirms to us that the [−ATR] vowels are unspecified for this feature in underlying representation. Whenever a [+ATR] feature is specified, it will spread to all the vowels of a word as we have seen previously.

The first case of neutralization concerns verb roots which have an inherent tense vowel pattern. Here the completive and incompletive verb forms are identical. We attribute this to a [+ATR] which forms part of the underlying specification of the verb root. The second case involves forms with the first and second person plural subject markers. These two suffixes, *-nei* and *-noi*, have invariable tense vowels; whenever they occur, they force all the vowels of the verb to be tense, regardless of aspect. We suggest that these two suffixes involve a [+ATR] specification in their underlying form, in parallel fashion to the previous case.

In conclusion, then, we note that the harmonizing [+ATR] vowels of a Kanembu verbal form may be traced to one of three sources: (1) a feature of [+ATR] that is part of the verb root, (2) a feature of [+ATR] that forms part of the person marker suffixes of the first and second person plural, or (3) a floating [+ATR] feature that *is* the incompletive aspect affix. In the first two cases, the morphemes in question involve the feature [+ATR] along with segmental material. In the last case, however, this feature is the only element making up the grammatical morpheme of incompletive aspect.[1]

2. Mafa and Podoko

Our next examples come from two Chadic languages of the Biu-Mandara branch, spoken in northern Cameroon. Chadic languages are well-known for their prosodies of palatalization and labialization, which exercise a phonological effect on certain consonants and vowels within their domain, usually the syllable or word. In most cases these prosodies are useful only to the phonological analysis of the language. But there is no reason why such suprasegmental features might not be exploited for grammatical purposes. And in fact, we have found two examples of just this phenomenon, which give further examples of floating features functioning as complete morphemes with full grammatical effect.

The phonology of Mafa is characterized by prosodies of both palatalization and labialization, as described by Barreteau (1987). The phonetic realization of these prosodies on the vowels and/or consonants of a word are determined by a precise set of rules, which Barreteau describes. Labialization, for example, causes the rounding of vowels and of certain consonants. Either prosody,

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[1] To complete the picture of completive and incompletive verb forms in Kanembu, Jouannet notes the existence of a second class of verbs, whose forms are more complex. This class does not complicate the analysis given above, however. In this class of verbs, the incompletive aspect is characterized by the tense vowel pattern we have already treated and also by a low tone on the last syllable of the person marker suffix. The completive aspect of these verbs, in contrast, is marked by the lax vowel pattern and by a high tone on the last syllable. One simple analysis of the forms of this class recognizes an additional floating tone characterized as "Class 2" morpheme. The incompletive aspect is still analyzed simply as a floating [+ATR] feature, regardless of the "class" of verb.

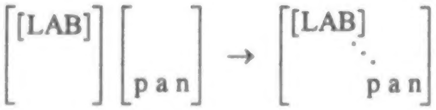
or both, may constitute a distinctive part of morphemes, as may segmental material (vowels or consonants).

In addition, Barreteau says that the feature of labialization is also used with a grammatical function, serving to form the perfective stem of the verb. Further, it seems that this is the *only* mark of the perfective aspect. No overt affix is added to the verb root. (The final low vowel of the perfective forms is supplied for phonological reasons, and its quality is determined by what prosodies affect the word as a whole.)

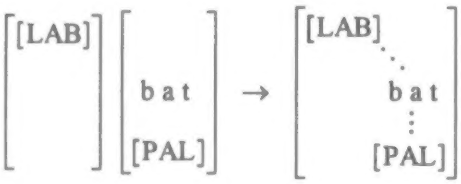
	Verb	*root*		*Perfective*	*stem*
	(underlying)	*(surface)*		*(underlying)*	*(surface)*
(10)	pan-	pán-	*to wash*	ʷpan-	póna
(11)	təv-	tə́v-	*to brown*	ʷtəv-	túva
(12)	ʲbat-	bét-	*to cradle*	ʷʲbat-	bœ́te
(13)	ʲmən-	mín-	*to spin cotton*	ʷʲmən-	mʉ́ne
(14)	ʷndas-	ndos-	*to blunt*	ʷndas-	ndosa
(15)	ʷsəm-	súm-	*to buy*	ʷsəm-	súma
(16)	ʲʷndzak-	ndʒœkʷ-	*to harvest*	ʲʷndzak-	ndʒœkʷe
(17)	ʲʷbək-	bʉkʷ-	*to bark*	ʲʷbək-	bʉkʷe

Here we claim that the perfective morpheme is simply a floating feature of [LAB].[2] When this feature associates with a verb root, its phonetic realization is determined in the same way as for the prosodic feature of [LAB] which forms a part of certain roots such as /ʷndas/ or /ʷsəm/, as Barreteau himself points out. Consider the derivations of (10), (12), and (15), which are represented as (18)-(20) below:

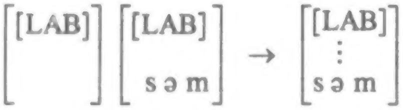
(18)



(19)



(20)



(reduction by OCP)

In each case, the perfective morpheme is represented as the floating [LAB] feature prefixed to the verb. The verb root /pan/ in (18) involves no inherent prosodies; the perfective feature [LAB] will thus associate to it in straightforward fashion. In (19) the root has a palatal prosody as part of its lexical representation and its perfective form involves the double association of both [LAB] and

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[2] We leave aside in this discussion the precise definition of the feature (or complex of features) involved in what we have labeled as [LAB].

[PAL] with the segments of the verbal form. The last example is of a root with an inherent labial prosody. Barreteau notes that, in such cases, there is no difference between the verb root and its perfective stem. This causes no problems to the analysis; when the [LAB] of the perfective is affixed to the verb root, the two identical [LAB] features are collapsed by the Obligatory Contour Principle.

A similar example, but this time with the palatalization prosody, is provided by Podoko. The phonology of Podoko has been described by Swackhamer (n.d.) and its grammatical system by Jarvis (1989). A prosody of palatalization plays a central role in the phonology. It may affect a whole word and in so doing changes the phonetic realization of a number of segments falling within its domain. The vowels /ə/ and /a/ are regularly realized as [i] and [ɛ] when affected by this prosody, for example, and the alveolar consonants /s/, /z/, /ts/, and /dz/ are realized as [ʃ], [ʒ], [tʃ], and [dʒ], respectively.

In the grammatical system, the palatalization prosody is all that marks a verb in its transitive imperfective form. Witness the following verb roots, along with their corresponding transitive imperfective forms.

	Verb	*root*		*Transitive*	*imperfective*
	(underlying)	*(surface)*		*(underlying)*	*(surface)*
(21)	bat-	bat-	*eat (flour)*	ʲbat-	bɛt
(22)	ɓəz-	ɓəz-	*destroy*	ʲɓəz-	ɓiʒ
(23)	dzak-	dzak-	*teach*	ʲdzak-	dʒɛk
(24)	ndəl-	ndəl-	*cut*	ʲndəl-	ndil
(25)	sul-	sul-	*roast*	ʲsul-	ʃul
(26)	pəts-	pəts-	*change*	ʲpəts-	pitʃ
(27)	ʲnan-	nɛn-	*despise*	ʲnan-	nɛn
(28)	ʲdzər-	dʒir-	*watch*	ʲdzər-	dʒir

According to the parameters of transitivity and aspect (perfective/imperfective), any verb may appear in one of four forms; the corresponding affixes are summarized in the following table, taken from Swackhamer 1992.

(29)

	Imperfective	*Perfective*
Intransitive	-i	-aha
Transitive	ʲ-	-a

This chart raises other intriguing questions of morphological analysis, which we will not pursue.[3] Of the four affixes presented, it is the transitive imperfective affix that interests us here, the prefixed prosody of palatalization. The form of this affix is unique in that there is no segmental material

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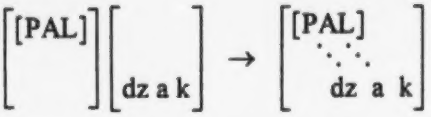
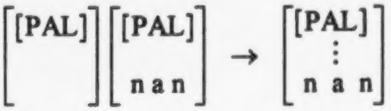
[3] For example, it might be argued that the palatalization prosody is the mark simply of imperfective aspect, since palatalization seems to be involved in both the transitive imperfective and the intransitive imperfective affix *-i* (analyzable as the palatalized version of the vowel *ə*). This would imply that the transitive category is unmarked as such, but that the intransitive is marked by an additional affix (*-ə* in the imperfective, and perhaps *-ah* in the perfective). If this reanalysis is accepted, it might then be more appropriate to refer to the floating [PAL] feature as simply the marker of imperfective, rather than specifically transitive imperfective. We will continue to use the full label used by Swackhamer for this morpheme, however.

associated with the morpheme, only the floating feature [PAL].[4] All the others are "normal" affixes, involving simply segmental material. We provide the derivations of examples (23) and (27), represented as (30) and (31). Note that in (27)/(31), the transitive imperfective form is identical to the verb root, since the verb root itself has an inherent feature of [PAL].

(30)



(31)



(reduction by OCP)

3. Aka

We now turn to an example from Aka, a Bantu language of Zone C, spoken by the Pygmies of the Central African Republic. The data presented here come from Kosseke and Sitamon (1993). Consider the following pairs of singular and plural nouns, from classes 5 and 6.

	Singular (class 5)	*Plural (class 6)*	*Gloss*
(32)	dèŋgé	màtèŋgé	*piercing tool*
(33)	dɔ̀tɔ̀	màtɔ̀tɔ̀	*cartridge*
(34)	gásá	màkásá	*palm branch*
(35)	gìnì	màkìnì	*fly*
(36)	bòkí	màpòkí	*arch of the eyebrows*
(37)	bàpùlàkà	màpàpùlàkà	*lung*
(38)	βɔ̀ndú	màɸɔ̀ndú	*goiter*
(39)	βókó	màɸókó	*hole*
(40)	dʒú	màsú	*cheek*
(41)	dʒèlé	màsèlé	*lizard (sp.)*

At first glance, it seems that class 5 has a zero prefix, and class 6 a *ma-* prefix. However, there is an additional difference: the noun roots in class 6 all begin with a voiceless obstruent, while the class 5 singulars all begin with a voiced consonant. An additional peculiarity is that the voiceless counterpart of *dʒ* is *s* (seen in 40, 41). This is not problematical, though, when we realize that there is no *z* nor *tʃ* in the language and that these two constitute a voiced-voiceless pair just like *b/p*, *d/t*, or *g/k*.

Contrast now the behavior of these pairs with the straightforward pairs of singular-plural nouns from classes 9 and 6, below:

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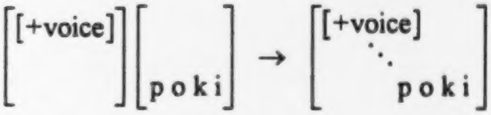
[4] As we did in the treatment of [LAB] in Mafa, we leave aside questions of the precise specification of the feature (or features) involved in the cover term [PAL] we are using here.

	Singular (class 9)	*Plural (class 6)*	*Gloss*
(42)	tɔ̀ŋgú	màtɔ̀ŋgú	*navel*
(43)	kùŋgà	màkùŋgà	*body hair*
(44)	kómbó	màkómbó	*name*
(45)	séɓá	màséɓá	*horn*
(46)	sɔ́pɔ́	màsɔ́pɔ́	*earth*
(47)	ɸúmà	màɸúmà	*house*

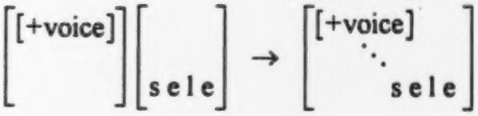
Here it is clear that the class 9 prefix is indeed zero, and that the class 6 prefix is simply *ma-*. Given that the class 6 prefix is *ma-*, then the noun roots of (32)-(41) must begin with voiceless consonants. Whence then the voicing in the singular class 5 forms?

Our analysis simply posits a floating feature of [+voice] as the class 5 marker. When the noun class prefixes are added to the roots by morphological rule, the floating feature then associates rightward to the first consonant of the root. In cases like (41), a low-level rule will specify that *s* associated with [+voice] is phonetically *dʒ*. Following are derivations for (36) and (41).

(48)



(49)



Given this analysis of the class 5 forms, we would expect noun roots that begin with voiced consonants to be unaffected by the class 5 prefix: both singular (class 5) and plural (class 6) forms would begin with a voiced consonant. This is indeed true, as shown in the following examples:[5]

	Singular (class 5)	*Plural (class 6)*	*Gloss*
(50)	gɔ̀àlà	màgɔ̀àlà	*game of imitation*
(51)	dʒámbà	màdʒámbà	*mud*
(52)	ĩkèlò	màĩkèlò	*pineapple*

However, there are some idiosyncrasies to take note of. First, it seems that all of the bilabial and alveolar voiced obstruents that begin noun roots of class 5 are implosives. One sole example has been found of a class 5 noun root beginning with a plosive *b* (example 55).[6]

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[5] These noun forms of class 5 look identical to those of class 9. The membership of a noun in one or the other class can be determined only by the concord markers it calls for: e.g. its possessive marker is *dʒá* if it belongs to class 5, but is *jà* if it belongs to class 9.

[6] The exceptional behavior of this form may be related to the fact that its meaning suggests that it might be an ideophone; ideophones often exhibit exceptional phonological characteristics.

	Singular (class 5)	*Plural (class 6)*	*Gloss*
(53)	ɓómbá	màɓómbá	*package*
(54)	ɓɔ́ɗù	màɓɔ́ɗù	*elephant's trunk*
(55)	bèlèlè	màbèlèlè	*sound of a waterfall*
(56)	ɗóká	màɗóká	*elbow of a hoe*
(57)	ɗùŋgí	màɗùŋgí	*honey (sp.)*

It seems that the voicing of these root-initial consonants has been reinforced by making them implosive, thus further differentiating them from noun roots which begin with a voiceless consonant. (It is interesting to note that none of the class 9 noun roots in the data begins with simple voiced obstruents either, but only with prenasalized ones.)

More serious questions are raised about the analysis when we consider a handful of vowel-initial noun roots. The class 5 prefix seems to exhibit two other allomorphs in these cases, *ɗ-* before roots beginning with *i*, and *dʒ-* before roots beginning with other vowels:

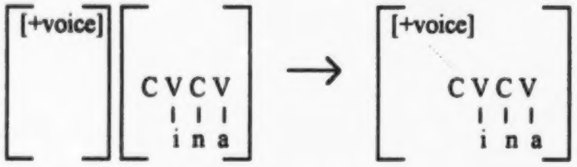
	Singular (class 5)	*Plural (class 6)*	*Gloss*
(58)	ɗìnà	mínà	*name*
(59)	ɗìsɔ̀	mísɔ̀	*eye*
(60)	dʒémè	mémè	*pregnancy*

The existence of these allomorphs suggests that perhaps we should recognize the underlying form of the class 5 prefix to actually be the segment *ɗ* or *dʒ*. If the noun root begins with a vowel, the consonant of the prefix remains; but if the root begins with a consonant, the prefix consonant disappears, lending its voicing to the initial consonant of the root. This analysis is possible, of course, but other alternatives should be considered.

Perhaps the most straightforward alternative is to treat the three allomorphs as distinct, not all traceable to a single underlying form. The two or even three forms of the morpheme must be spelled out by lexical rules: [+voice] before consonants; *ɗ-* before *i*; and *dʒ-* before other vowels.

But there is even another alternative which traces the three allomorphs from a common underlying form, the floating feature [+voice]. Let us assume that noun roots must always begin with a consonant. In the cases of (58)-(60) this is an empty consonant which we will represent as C. When the class 5 prefix [+voice] is added, we get structures such as the following:

(61)



Let us further assume that the empty C will receive an alveolar point of articulation by default, so that the complex of C associated with [+voice] yields something like *d*. When preceding a nonhigh vowel, this consonant becomes *dʒ* by a lexical rule specific to class 5; when preceding the vowel *i*, the consonant further changes to *ɗ* by the same rule that is used for (56)-(57), if the latter are to be derived from underlying initial *d*.

The plural forms such as *mina* of class 6 pose a further question for this analysis, if the prefix is indeed *ma-* as in the other cases. Here it might be hypothesized that the empty C of the root is deleted if it is still unassociated after the affixation of the noun class prefix. This would then pave the way for the further deletion of the *a* of the prefix when it precedes a vowel:

(62) [ma] [Cina] → [ma] [ina] → [m] [ina] → mina

4. Mokulu

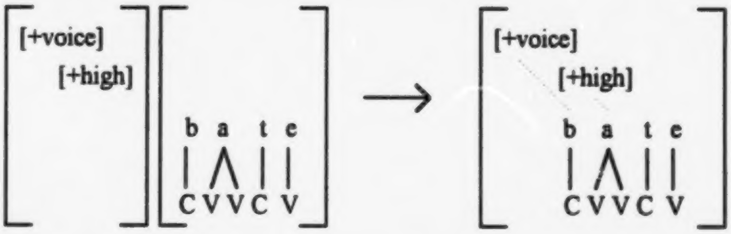
Our last main example comes from Mokulu, an Eastern Chadic language spoken in the Guéra region of Chad. The data used here are all recorded in Jungraithmayr's (1990) lexicon, and the morphological analysis follows that of Sharp (forthcoming). The interest of this example comes from the fact that the morpheme to be studied involves a complex of two unrelated features, each of which has a different effect when attached to a verb root.

Consider the following verbal paradigm, which includes the citation (root) form[7] and the form of the completive aspect:

	Citation form	*Completive*	*Gloss*
(63)	pélkè	bílkè	*to chat, converse*
(64)	báàtè	bíìtè	*to lack*
(65)	dîrse	dîrse	*to lean on*
(66)	kóppé	gúppé	*to swim*
(67)	gárkè	gírkè	*to practice divination*
(68)	cààcé	jììcé	*to deceive*
(69)	jíìdè	jíìdè	*to add*
(70)	séllè	zíllè	*to appease, console*
(71)	zòòríkè	zùùríkè	*to expect*
(72)	èèpé	ììpé	*to fill a receptacle*
(73)	óòpè	úùpè	*to be left over*
(74)	lékkè	líkkè	*to live*
(75)	nààbé	nììbé	*to work*

Note that the completive forms are uniformly characterized by an initial voiced consonant and a high vowel. In many cases these correspond to initial voiceless consonants and/or lower vowels in the verb root. But in no case is the syllable structure of the completive any different from that of the root. We thus analyze the completive aspect morpheme as composed of the complex of the two floating features [+voice] and [+high]. These two features belong to different tiers, and exhibit different behavior when attached to verb roots. The [+voice] feature associates to the first C slot of the root, if one exists, and the [+high] feature associates to the first (and only underlying) vowel of the root. The derivations of (64) and (66) are sketched below:

(76)



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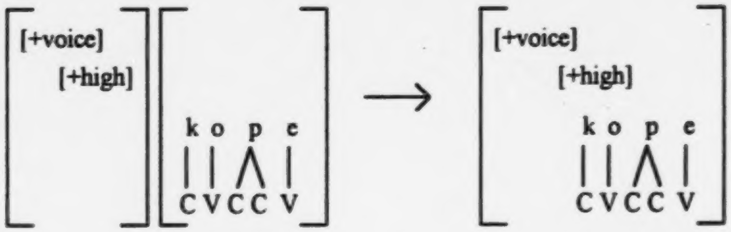
[7] This form is called the subjunctive by Jungraithmayr (1990); it is, however, the one closest to the verb root in its basic form.

(77)



The formation of the completive forms is completely regular and productive. There are only a couple of idiosyncrasies that are worth noting. As seen above, a root vowel *a* becomes *i* in the completive. This suggests to us that any vowel affected by the [+high] feature will become *i* by default unless the vowel is additionally specified as [+round].[8] The second exceptional fact about the formation of the completive aspect is that an initial *t* of a verb root is excepted from the voiceless-voiced alternations. All other obstruents participate in regular fashion – *p/b, c/j, k/g, s/z* – but *t* remains voiceless in the completive:

	Citation form	*Completive*	*Gloss*
(78)	tàtté	tìtté	*to try*
(79)	térlè	tírlè	*to spin cotton*
(80)	tóògè	túùgè	*to refuse to give*

This fact may be related to the use of *t* as a liaison consonant before certain vowel-initial verb roots in certain contexts. *t* thus seems to be the default consonant for Mokulu, and its features are left unspecified. It may then be required that the [+voice] feature attach only to consonants with some feature specification. It is clear that the [+voice] feature of the completive does not always end up attached, at any rate; in the case of vowel-initial roots the [+voice] feature likewise fails to attach to any consonant (see examples (72) and (73)).

We finish our consideration of Mokulu by noting again the complete productivity of the effects of the completive morpheme. It even associates, in regular fashion, to borrowed roots whose phonological structure is somewhat exceptional.

	Citation form	*Completive*	*Gloss*
(81)	pòmpé	bùmpé	*to pump, inflate*
(82)	pàbriké	bìbriké	*to make, manufacture*
(83)	kùmàndé	gùmàndé	*to order*
(84)	rą̀zé	rį̀zé	*to arrange, line up*
(85)	są̀zé	zį̀zé	*to change*

Note especially (84) and (85), loan words from French that contain nasalized vowels which are foreign to the phonological system of Mokulu. Even here the [+high] feature attaches as it would to any native Mokulu vowel, producing the parallel phonetic effect.

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[8] Two considerations seem to confirm this fact. First, [i] is the default vowel in the Mokulu system; it is the only one which can appear in medial positions of polysyllabic words. Secondly, there is a class of verb roots with the vowel /o/ which become [i] in the completive (e.g. *gòrbá* 'to cut grass', completive *gìrbá*; *kòɗɗìpè* 'to tie in knots', completive *gìɗɗìpe*). I consider that the underlying vowel of these verbs is unspecified for the feature [round]; this vowel may be the reflex of a central *ə*, which does not exist in the language today.

5. Conclusion

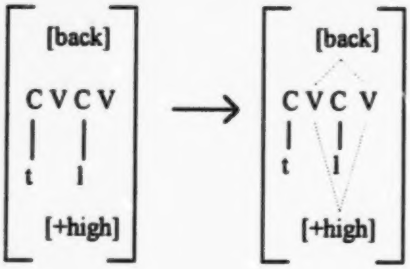
The burden of the present paper has been to establish the existence of floating feature morphemes. The variety of the examples presented and the simplicity of their analysis given the possibility of floating features argue strongly that a wide variety of features, not merely tonal features, may constitute full morphemes. Undoubtedly many more examples of this phenomenon can be adduced from other languages. However, we caution that some putative cases of floating feature morphemes may be alternatively analyzable as including actual segmental slots.

In Ngbaka (a Ubangian language of Zaïre), for example, the definite forms of nouns involve a suffix that might be composed simply of floating features. Witness the examples of (86)-(92), taken from Grand'Eury 1991:

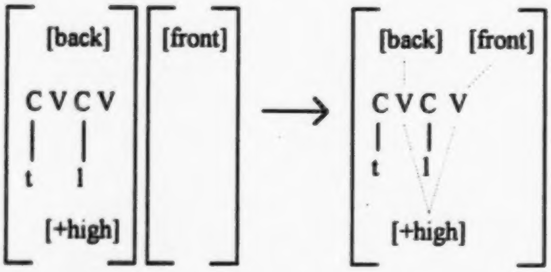
	Noun	*Definite*	*Gloss*
(86)	tūlū	túlí	*clothing*
(87)	fɔ̄lɔ̄	fɔ̄lɛ̄	*elephant*
(88)	bòlò	bōlē	*war*
(89)	fàndē	fàndé	*raffia*
(90)	kīlì	kílí	*fear*
(91)	gbɛ̄lɛ̄	gbɛ́lɛ́	*old person*
(92)	kùlā	kùlá	*maternal aunt*

It may be possible to analyze the definite morpheme as simply a floating feature [front], along with a floating high tone which raises the last tone of the word.[9] Compare the suggested derivations of the nondefinite and definite forms of (86), represented as (93) and (94):

(93)



(94)



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[9] In the following discussion, I ignore the tonal components of the definite morpheme. I assume, however, that a single floating High tone feature can account for the several tone changes attested in the noun forms, based on the framework of Snider's (1993) register tone theory.

However, a comparison with other forms of the same paradigm makes this analysis less certain.

	Nondefinite	*Definite*	*Gloss*
(95)	nù	nūī	*earth*
(96)	sìkó	sìkóé	*chimpanzee*
(97)	gbànù	gbānūī	*guinea fowl*
(98)	lē	lé·	*village*

In particular, one may need to recognize that the definite suffix involves a segmental (vowel) timing slot in addition to the [front] feature. In the first three examples it might be possible to argue that the diphthong at the end of the definite forms is actually a contour of the sequence [back][front] associated with the single V slot which originated as part of the noun root – in other words, that the addition of the suffix in fact does *not* add any new *segments* to the word. It would seem, however, that the definite forms *nui* or *sikóé* have one more timing unit than their nondefinite counterparts. And in (98) the definite form involves a lengthened vowel but *no* contour of vowel quality. This suggests that the definite suffix may be composed of a segmental slot as well as the features of [front] and high tone. If this is so, the forms of (86)-(92) have a more complex derivation, involving the reduction of the VV sequence that arises as a result of suffixation.

Again, we note that affixes usually involve some segmental elements; to find morphemes composed just of features is much less common, although theoretically allowable and empirically attested. From a diachronic point of view, it might be suggested that morphemes begin as fully specified for segmental timing slots, as well as for additional features defining specific consonants and vowels. In some cases, the underlying content of the morpheme may erode to the point that the last segmental slot is dropped, leaving only a feature or features without segmental support to mark it. Although the Ngbaka definite marker may at present involve a V slot as part of its content, it is possible that, at some future point, the segmental slot will drop, leaving only the floating features of [front] and High tone as the markers of the morpheme.

In conclusion, let us consider what generalizations can be made about floating feature morphemes. First of all, we note that there seem to be no real restrictions on what phonological features can be involved. In addition to tonal features, we have found laryngeal features (voice) and supralaryngeal place features (LAB, PAL, high, ATR). There are also examples of the feature [+nasal] used as a floating feature morpheme, although we have not noted an example from an African language. (This seems clear from Bendor-Samuel's (1960) description of the Brazilian language Terena. The first person marker is simply a floating feature [+nasal] which spreads, when added to a root, to each of the root's segments, starting from the left and continuing up to the first obstruent.) It seems impossible to characterize only a certain class of features as usable for grammatical purposes.

If there are no phonological restrictions on what features can be used for grammatical purposes, is there any morphological characterization that can be made about these cases? It may be tempting to note that all the examples given in this paper have been of inflectional affixes. Also, the realization of the effects of the floating feature has in each case been completely transparent and productive. As such, it seems that such morphemes are added on the last stratum of the lexicon. Will this prove to be true of all floating feature morphemes? While these characteristics may prove to be appropriate for most examples, we note a couple of cases that potentially counter this generalization. It may be argued, on the one hand, that the triliteral roots of Semitic morphology constitute morphemes that are composed of merely complexes of phonological features without any segmental support. In this case, the morpheme in question would be a root, not an inflection, and as such must be present at the very first stratum in the morphological derivation of the word. On the other hand, it may not be that the effects of floating feature morphemes are always totally transparent and productive. The behavior of consonant mutation systems of languages such as Fula are notoriously exceptional; if a floating feature morpheme is used to account for such phenomena, it is likely that the exceptional effects may again have to be treated at any early stratum within the lexicon.

Finally, we suggest that only the *marked* value of a phonological feature may be used to constitute a full morpheme. This relates to the fact that the presence of each morpheme must contrast with its absence in the grammatical structure. Thus, in order for a phonological feature to mark a grammatical distinction, it must be the marked value of that feature which is used. Although this may seem obvious, the observation provides a criterion for determining what is the marked value of a phonological feature. For example, a language which uses floating grammatical low tones must have a nondefault feature of Low tone; such a Low tone may not be an instance of [–High tone], for example, but specifically [+Low tone].

We conclude, then, that floating nontonal morphemes must be recognized; these are well attested, using a variety of features and ocurring in a variety of languages. As a result, the behavior of tonal and nontonal features are shown to be more parallel and more closely related than is often assumed.

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The Distribution and Properties of Babole Prenasalized Segments

Myles Leitch[1]

Babole, a Bantu language of Congo, has both voiced and voiceless prenasalized consonants. While the consonants of the voiced series have free distribution as segments, those of the voiceless series occur only stem-initially following a prefix. In the case of unprefixed imperatives, stem-initial voiceless prenasals drop the prenasalization. Adopting the ranked-constraint approach of Optimality Theory (Prince and Smolensky 1993), the paper shows that both the skewed distribution of voiced and voiceless prenasals, and the phenomenon of nasal-dropping follow from the interaction of three constraints. One constraint, ClusterVoi, reflects the grammar's preference for voiced prenasals. A second, ALIGN, insists that prefixes be immediately followed by a syllable, effectively prohibiting underparsed material stem-initially. The third constraint, PARSE, penalizes the underparsing of segments or features (nasality in this case). I propose a ranking for the constraints and show that the quirky behavior of prenasals can be accounted for succinctly by the constraint interaction. The paper thus solves an interesting descriptive problem and provides support for Optimality Theory.

Babole, a Bantu language of Congo, has on the surface both a voiced and voiceless series of so-called prenasalized segments, listed in (1).[2]

(1)						
	voiced series:	mb	nd		ndz	ng
	voiceless series:	mp	nt	ns	nts	nk

However, the distribution of these complex segments is highly asymmetrical, and calls for an account. The purpose of this article is to suggest a solution to the puzzle within the emerging framework of Optimality Theory (henceforth OT).[3] In section 1 I lay out the data and a few general assumptions about the syllable and moraic structures involved. In section 2 I proceed to an account of the data by introducing and arguing for several constraints which interact in the way prescribed in OT. I show how these constraints, when ranked in a particular way, can account for the data straightforwardly, thus providing confirmation of OT.

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[1] I wish to thank Susan Blake, Laura Downing, Mark Hewitt, Ping Jiang-King, Ola Nike, Doug Pulleyblank, Kimary Shahin, Pat Shaw, and Aki Uechi, all from the Linguistics Department at the University of British Columbia, for stimulating discussion of this material and other aspects of Babole phonology. I also thank Andy Black, Steve Marlett, and Chuck Speck of SIL, University of North Dakota, for helpful comments and discussion of the analysis.

[2] Babole has been classified as C-10, Guthrie's classification, in Leitch 1989. All Babole data are from my own field work, conducted in the period 1988-1992.

[3] McCarthy and Prince 1993, Prince and Smolensky 1993.

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1. Distribution of Prenasalized Segments[4]

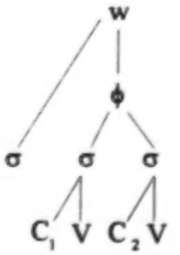
1.1. Prenasalized Segments in Nominals

A few comments about Babole morphological structure are in order to start the discussion. Nominal forms are most generally of the shapes exemplified by the forms in (2), consisting of a CV, V, or N (placeless nasal) prefix and a disyllabic stem.

(2)		*Singular*	*Plural*	*Noun Class*	*Gloss*
	a.	di-sóngó	ma-sóngó	5/6[5]	*toilet, outhouse*
	b.	bo-tɛ́bú	ma-tɛ́bú	14/6	*traditional razor*
	c.	e-kɛ́tɛ́	bi-kɛ́tɛ́	7/8	*skin*
	d.	N-bímb-í	ma-mbímb-í[6]	9/6	*satiety*

If the nominal is derived from a verb root, as in (2d), the stem may have internal morphological constituency. For underived nouns, the stem may be considered a single morpheme. It is useful to schematize the structure of nouns as [PRE-[STEM]], where STEM=C_1VC_2V. This permits the two consonant positions in the stem to be referred to independently. I propose that the morphological structures in (3) be assigned the prosodic structure represented in (3).[7]

(3)



$$C_2 \begin{cases} \text{mb, nd, ng} \\ \text{*mp, *nt, *nk} \end{cases}$$

The distribution of prenasalized segments with respect to this prosodic structure is as follows: the onset of the *foot-internal* syllable (i.e. C_2) may be of the voiced series but never of the voiceless series.[8] There is no other relevant restriction on C_2. Thus a word such as disóngó, *toilet, outhouse*, is perfect in Babole, but *disónkó would be an impossible word.

---

[4] I use the word *segment* freely when referring to the prenaslized objects above; however, they are ambiguous between segments and clusters, the most accurate term being perhaps complex segments.

[5] Bantu nominal forms are conventionally cited in singular/plural pairs corresponding to the singular / plural prefix pair that the nominal takes. The traditional numbering system is from Meinhof.

[6] Class 9/6 is different from the other singular/plural pairs in that the plural prefix takes the singular as stem, incorporating the singular prefix /N/ as part of the stem onset and then adding the ma- plural prefix. The verbal root here is -bímb- *be full*. Class 9 nominals are outside the scope of this paper.

[7] In this version of the prosodic hierarchy we have Prosodic Word (W), Prosodic Foot (ϕ), and Syllable (σ). Note the assumption of *weak layering*: the prosodic word may dominate the prefix syllable directly without an intervening foot layer. For a discussion of weak layering see Ito and Mester 1992.

[8] These facts are reminiscent of the cases of restricted foot-internal C_2 cited in Hyman 1990.

Consider now the forms in (4), where C_1 (underlined) can be from either the voiced or voiceless series of prenasalized segments.

(4)		*Singular*	*Plural*	*Noun Class*	*Gloss*
	a.	mu-mpɔ́mbɔ	mi-mbàká	3/4	*message drum, talking drum*
	c.	di-ntùmù	mi-mpɔ́mbɔ̀	3/4	*agressive arboreal ant species*
	b.	mu-mbàká	ma-ntùmù	5/6	*succulent wild fruit*
	d.	di-ndúndù	ma-ndúndù	5/6	*air bubble in water*
	e.	di-nkɔ̀tì	ma-nkɔ̀tì	5/6	*horn of an animal*
	f.	di-ngàsé	ma-ngàsé	5/6	*little cola nut*
	g.	e-nsùɛ̀	bi-nsùɛ̀	7/8	*finger- / toenails*

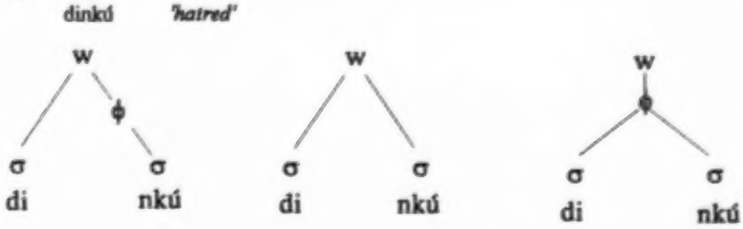
The stem-initial prenasals underlined in (4) cannot easily be argued to be derived by prefixation with N- historically. In other words, they appear to be underlyingly part of the root. What licenses their presence here but not stem-internally? This is the first asymmetry that requires an explanation.

But there is another word shape where the stem consists of a single syllable instead of two. Examples are provided in (5).

(5)		*Singular*	*Plural*	*Noun Class*	*Gloss*
	a.	di-hɔ́	ma-hɔ́	5/6	*affair, matter*
	b.	mo-bú	mi-bú	3/4	*famine*
	c.	di-ngwɛ̀	ma-ngwɛ̀	5/6	*ritual pendant, jewelry*
	d.	di-nkú	ϕ	5/	*hatred*

Words like these are less common in the Babole lexicon, but can hardly be called rare. As seen from the examples in (5), a stem-initial segment may either be from the voiced series, (5c), or voiceless series, (5d). Corresponding to (3), then, consider the choice of prosodic representations provided in (6) for these 'short' words.[9]

(6)



The leftmost representation, although involving a non-binary (i.e., degenerate) foot, has the advantage of allowing us to maintain the generalization from (3) on the distribution of /mp/, /nt/, /nk/: they cannot be foot-internal. This generalization would be lost if either the second or third representation were accepted. While such a generalization about the data expressed in terms of the prosodic hierarchy is desirable, it falls short of explaining why this should be the case.[10]

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[9] This raises the question of word minimality effects in Babole. There is clear evidence that the minimal word in Babole is [σσ]. However, since minimality effects play no role in the phenomena discussed in this paper, I will not attempt to motivate prosodic word minimality in this context.

1.2. Distribution of Prenasalized Segments in Verb Roots

Before turning to the OT characterization of this puzzle, we will consider the distribution of prenasalized segments in verb roots. Verb roots have a wide variety of shapes in Babole, but 'pure' roots, that is, ones not incorporating varying degrees of historically suffixal material, are either CVC or CV. Not unexpectedly, the same restriction observed in nominal stems applies in verb roots: C_2 may not be *mp, nt,* or *nk,*[11] whereas examples with the voiced series, as in (7), are extremely common.

(7) *Examples of Roots with C_2= mb, nd, ng*

-hámb-	*curse*
-hànd-	*start again*
-hàng-	*become mean*

Perhaps more surprising is the fact that *all* of the prenasalized segments (with the exception of /ng/) are quite rare in C_1 position in verb stems. In (8), I provide examples of verb roots with prenasals in initial position. In each case I have indicated the number of such examples in my lexicon of more than 1000 verb roots in order to give a clear picture of the statistical rarity of these forms.

(8) *Examples of Prenasal C_1 In Verb roots (lexical database of >1000 verbal roots):*

C_1= mb 3/		*mp 11/*	
-mbíkikad-	*become thick, thicken*	-mpèt-	*become stuck*
-mbwàk-	*make bubbles*	-mpéngum-	*limp*
-mbwàmbwat-	*shake, shiver, tremble*	-mpílo-	*jump*
nd 4/		*nt 7/*	
-ndàmbim-	*jump up, bounce up*	-ntémb-	*become erect*
-ndànd-	*check out, feel out*	-ntêng-	*writhe*
-ndùm-	*stuff the mouth with...*	-ntùmod-	*whip, chasten*
-ndúnde-	*give a large portion*	-ntùntum-	*tremble*
ng 30/		*nk 2/*	
-ngòndze-	*kneel down*	-nkìn-	*underestimate*
-ngɔ̀nd-	*bend*	-nkònyod-	*crunch with teeth*
-ngékod-	*decapitate*		

The meaning of, or reason for, this distributional asymmetry with respect to the C_1 position in nominal and verbal stems is not clear. What interests us, in the context of this paper, however, is simply that such roots exist and that they show peculiar behavior in a certain context. I turn next to examine the unusual behavior of prenasals in C_1 position in verb roots.

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[10] Alternatively, it would be possible to express the restriction on C_2 as a morpheme structure constraint to the effect that: prenasals in C_2 of *roots* may only be of the voiced series. This option would have the same lack of explanation as a generalization stated on foot structure.

[11] In a lexicon with over 1000 verbal roots there is only the form -hɔ̀nkɔt- *attach firmly* that violates the generalization.

1.3. Nasal-Dropping in Imperatives

The 'unusual' behavior referred to is that, in the imperative singular of the verbs with a voiceless prenasal root-initial C, the nasal 'part' of the prenasal 'drops out' (i.e., is simply not pronounced). To make the contrast clear, consider, first, prefixed examples with a voiced stem-initial prenasal, (9a), and a voiceless one, (9b). Prenasalization is preserved in both series when a prefix is present. (9c), an example with a non-prenasalized initial, is included to show that the nasality is not related to the prefix *à*, third person singular subject.

(9) *Prefixed verbs maintain both classes of Stem-Initial Prenasals*

a.	[à.ndù.mí]	/à-ndùm-í/	*he stuffed his mouth...*
b.	[à.ntù.mó.dí]	/à-ntùmod-í/	*he whipped*
c.	[à.kì.dí]	/à-kìd-í/	*he renounced...*

However, when the need for a prefix is removed by using the imperative singular, voiced prenasal initials maintain the nasal articulation, while the voiceless ones 'drop' the nasal. This is illustrated in (10) below.

(10) *Imperatives 'drop' nasal in the voiceless class*

Voiced Class			
/ndùm-á/	[ndù.má]	*[dù.má]	*stuff your mouth!*
/ndàmbim-á/	[ndà.mbí.ma]	*[dà.mbí.má]	*jump up!*
Voiceless Class			
/ntùmod-á/	[tù.mó.lá]	*[ntù.mó.lá]	*whip!*
/ntùntum-á/	[tù.ntú.má]	*[ntù.ntú.má]	*tremble!*

This is something that requires an explanation. Moreover, it should be required of an adequate analysis that the impossibility of having the voiceless prenasals in initial position in imperatives be related to the impossibility of having them root/stem internally (sections 1.1 and 1.2). After outlining a few pertinent facts about Babole syllable structure in section 1.4, I proceed directly in section 2 to an analysis in terms of OT.

1.4. Babole Syllable Structure

My assumptions about Babole syllable structure for the purposes of the article are as given in (10) and (11).

(10) a. The only moraic consonant is the nasal glide prefix /N/.
b. Only vowels can be nucleus of a syllable.[12]

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[12] The Class 9 morpheme ends up being realized as [i] with some degree of nasalization, in both voiced and voiceless prenasals; for example, ngɔ́mɔ̀ *drum* is [ĩ.ŋgɔ́.mɔ̀], while nkìlò *renunciation* is [ĩ.ŋkì.lò]. In other words, Class 9 nominals always have a syllable that corresponds to the noun-class prefix /N/. This might be taken as evidence that the /N/ had

(11) Babole Syllable Structure = $\Sigma^{(c)V}$ (Prince and Smolensky 1993:94)

(11) means two things. First, the language has optional onsets. There is no gratuitous epenthesis to satisfy the onset requirement. Example (12) illustrates the extent to which Babole allows onsetless syllables.[13]

(12)	à.ó.í	ngɔ́mɔ̀		
	à	-ó	-í	ngɔ́mɔ̀
	3s	-beat	-CMPL	CL:9-drum

he beat the drum

Second, (11) means that codas are not allowed. In fact, for the purpose of this paper, I will maintain that Babole *strictly* forbids codas.[14]

2. Optimality Theory Account

2.1. The Constraints

OT conceives of grammar as a set of competing constraints, each of which, in itself, is violable. Constraints, unlike rules, do not apply serially or derivationally but in parallel. Candidate forms which fare best in the overall constraint interaction emerge as optimal. I see three constraints operating in the fragment of phonological grammar under consideration here:

Constraint 1 = ClusterVoi

One constraint needs to capture the fact that, for prenasals, the voiced series is stable, free in distribution, and somehow to be preferred over the voiceless series. Presumably [nas], because of its inherent sonorant voicing can only form a satisfactory complex segment with voiced segments. Clearly this constraint is violable since there are voiceless prenasals in some contexts. I call this constraint "ClusterVoi". ClusterVoi simply insists that the consonant member of NC clusters be voiced.[15]

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underlying moraic status. Moreover if syllable nuclei must be vowels, as suggested here, and exhaustive syllabification holds, then we can understand how a vowel gets inserted in these forms.

[13] There are also morpheme-internal onsetless syllables, as in the verb -sáo- *be insipid*. Although such forms may be historically derived from -sá- plus some suffix, such an analysis is not supported synchronically at all. Thus, I conclude that they exemplify morpheme internal onsetless syllables

[14] It might be possible to analyze the nasal as a Coda. For example, nkìlò *renunciation* would, on this view, be syllabified [ìŋ.kì.lò]. I thank Pat Shaw (personal communication) for bringing this to my attention. Nevertheless, I will not pursue this possibility here since the weight of evidence appears to rest with the alternative interpretation given in footnote 12. Furthermore, the non-existence of forms like *di-sónkò would be hard to account for if [di.sóŋ.kò.] were an acceptable syllabification. Recall the generalization that [nt], [nk], [mp], were acceptable as onsets only following a noun-class prefix. Under the coda analysis, attested words like di-nkú *hatred*, would have to be analyzed as diŋ.kú. It would then be necessary to explain why [diŋ.kú] is fine but *[di.sóŋ.kò.] is an impossible word.

[15] This constraint is not analogous to the NasVoi constraint of Ito, Mester and Padgett 1993.

Constraint 2= ALIGN (Pre-R, σ-L)

Prince and Smolensky (1993:104), propose a family of constraints which belong to the prosody-morphology interface. This family of constraints is called ALIGN. ALIGN constraints force alignment of one side (right or left) of morphological categories such as root, stem, prefix, etc., with one side of prosodic categories: mora, syllable, foot, prosodic word. ClusterVoi, as it is formulated, will always prohibit *mp, nt,* and *nk* unless some higher constraint comes to the rescue. In the case of the prefixed forms in (4) and (5), I will claim that the prefix comes to the rescue. The alignment constraint captures this.[16] The constraint ALIGN (Pre-R, σ-L) reads: "align the right edge of a prefix with the left edge of a syllable". No unsyllabified material may intervene.

Constraint 3= PARSE

The final constraint needed for the analysis is one of the family of "faithfulness" constraints (P&S, 87), which favor parsing or inclusion of features, segments, etc. into prosodic structure, and favor the filling of structural positions with content. PARSE simply says that there is a penalty for not having features or nodes properly gathered into prosodic structure. So, for example, a penalty must be incurred for underparsing the nasal in the case of initial voiceless prenasals in imperatives.

2.2. *Constraint Ranking and Candidate Evaluation in Tableaux*

I will simply propose a ranking for the constraints and then justify it by applying it to the crucial cases in our puzzle. The logic of the ranking will show itself to be rather obvious, following simply from the optimal forms. The constraints are ranked as in (13), where ">>" means "is more highly ranked than."

(13) ALIGN>>ClusterVoi>>PARSE

To verify that this ranking is correct and that the constraint interaction yields the desired results, I will discuss each relevant case below in Tableau format.

2.2.1. *How to Read a Constraint Tableau*

In a Tableau, the candidates[17] to be evaluated are listed, one to a row. The constraints, crucially ranked, are presented from left to right across the top of the Tableau. When a candidate violates a particular constraint, the cell corresponding to the violation receives an asterisk (constraint violation mark). After evaluating each candidate with respect to each constraint and assigning violation marks, the optimal candidate can be computed. The candidate that violates the fewest and least important constraints wins. Note that under this view of grammaticality, many 'grammatical' forms will actually violate one or more constraints, the optimal form being simply the least offensive in parallel evaluation of the whole candidate set. Periods in candidate forms indicate syllable breaks. The constraint violation asterisk that is 'fatal' to a particular candidate is marked with an exclamation mark, "!". The victorious candidate is indicated by a "pointing hand" symbol on the left.

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[16] Thanks to Doug Pulleyblank for suggesting the actual formulation of this constraint to me.

[17] The candidate set is produced by a function GEN, which pairs each underlying form with a "large space" of output candidate forms "by freely exercising the basic structural resources of the representational theory" (Prince and Smolensky 1993:4-5). In practice, only the most plausible pertinent candidates are included in a tableau for evaluation.

Elements in angle brackets "<...>" are 'underparsed', that is, not properly included in prosodic structure. The vertical bar "|" indicates a morphological edge where that is relevant to an ALIGN constraint.

2.3. *Discussion of Tableaux*

Case 1 shows that, with stem internal voiced NC sequences, failing to parse the nasal would always be worse than simply leaving it, since the optimal form violates none of the constraints being considered. In particular it doesn't violate ClusterVoi.

Case 1. Stem Internal voiced

	di-sóngó *outhouse, toilet*	ALIGN >> (Pre-R,σ-L)	ClusterVoi >>	PARSE
☞	di | .so.ngo			
	di | .so <n> .go			*!

Case 2 shows how the constraint interaction analyzes the stem internal restriction on voiceless prenasals. Recall that this applies both to verb roots and noun stems. Since PARSE is ranked below ClusterVoi, any form with the nasal underparsed will be optimal[18]. This explains *why* there are no voiceless prenasals root/stem internally. ALIGN plays no role whatsoever.

Case 2. Stem Internal voiceless

	Babole *nonce form*	ALIGN >> (Pre-R,σ-L)	ClusterVoi >>	PARSE
	di | .so.nko		*	
☞	di | .so<n>.ko			*

Case 3 shows that stem initial voiced prenasals violate no constraints; in particular ALIGN is crucially respected. The vertical line represents the Right edge of the prefix; the dot represents the Left edge of a syllable. Underparsing the nasal would be much worse, involving both an ALIGN and a PARSE violation. ALIGN is violated because the underparsed <n> is now intervening between the Right edge of the prefix and the Left edge of the syllable.

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[18] Note that this could be interpreted as saying that Babole lost nasals in this root internal C_2 position historically (perhaps through re-ranking ClusterVoi and PARSE). At present I have no evidence bearing on this question.

Case 3. Stem Initial voiced

	di-ngàsé *little cola nut*	ALIGN >> (Pre-R,σ-L)	ClusterVoi >>	PARSE
☞	di| . nga.se			
	di |<n >.ga.se	*!		*

Consider Case 4. There is a ClusterVoi violation, but resolving the problem by failing to parse the nasal creates misalignment. This can be seen from the Tableau below where the unparsed nasal <n> now intervenes between the Right prefix edge and the syllable which starts with /t/. The net result is that living with a single ClusterVoi violation is optimal. Note that this desirable result crucially depends on ranking ALIGN over ClusterVoi, confirming our choice of this ranking.

Case 4. Stem Initial voiceless

	di-ntùmù *wild fruit*	ALIGN >> (Pre-R,σ-L)	ClusterVoi >>	PARSE
☞	di |.ntu.mu		*	
	di|<n >.tu.mu	*!		*

For the imperative cases, below, ALIGN does not enter the picture since no prefixing is involved. In Case 5, unparsing the nasal creates a PARSE violation, showing that the optimal form with no violations clearly wins the contest.

Case 5. Imperative Initial voiced

	-ndùm- *stuff the mouth*	ALIGN >> (Pre-R,σ-L)	ClusterVoi >>	PARSE
☞	ndu.ma			
	< n > du.ma			*

For Case 6 where there a ClusterVoi violation, the crucial ranking of ClusterVoi over PARSE means that simply unparsing the nasal is preferable, incurring a less costly violation than ClusterVoi. The constraint interaction thus identifies the optimal output form correctly.

Case 6. Imperative Initial voiceless

	-ntùmod- *whip*	ALIGN >> (Pre-R,σ-L)	ClusterVoi >>	PARSE
	ntu.mo.la		*	
☞	< n > tu.mo.la			*

3. Concluding Discussion

In this way a fairly complex set of facts concerning the distribution and properties of NC segments in Babole receives a unified and simple account. The account moreover achieves the goal formulated at the end of section 1, to show the relation between the impossibility of voiceless prenasals internally in stems and initially in imperatives. This was accomplished by recognizing the key importance of the ClusterVoi constraint and ranking it in a particular fashion with respect to ALIGN and PARSE. Voiceless prenasals are rejected by the ClusterVoi constraint, but this can be avoided by underparsing the nasal 'part', incurring only a modest PARSE infraction in stem-internal position and initially in imperatives. Only in the prefixing cases where ALIGN adjudicates by legislating fatal results for underparsing, do the voiceless nasals surface.

The fact that results like these can be achieved through the ranking of a few highly plausible constraints is a strong confirmation of OT's basic correctness and potential. Of course the analysis of a fragment of phonological grammar, such as in this present study, needs to be confirmed by looking at the overall interaction of all relevant constraints in the whole of the phonology.

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Vowel Features in Madija

Patsy Adams Liclán and Stephen A. Marlett

This data squib presents the possessed noun paradigm in Madija as a window to the vowel system of that language. The alternations exhibited in these forms provide evidence that the vowel *e* is the unmarked vowel. This fact is important in an account of various vowel harmonic alternations.

Madija has four contrasting vowels, but no possessed noun roots begin with a syllabic *o*. The nouns that begin with consonants except *w* all act alike.[1] The phonological patterns illustrated by these data are also found in verb inflection since the same prefixes are used to indicate subject of the verb.[2]

The changes which occur with vowels trigger a harmonization of vowels in these nouns. An interesting change is the replacement of *a* by *e* in word-final position. This change occurs only with nouns of this class. Other nouns which illustrate this change include the following (as they appear before the feminine suffix): [apʰa] *leaf*, [abatʰa] *cheek*, [koɾima] *spirit of dead person*, [kota] *younger sibling*, [dopa] *under*, [dzawa] *uterus*, *afterbirth*, [dzapa] *hand*, [mata] *buttocks*, [napʰa] *egg*, [tatsʰa] *friend*, [natsʰopa] *saliva*, and [tona] *bone*. No examples were found with a medial velar stop in words of this pattern.

There is no prohibition on word-final *a* in verbs, adjectives, or unpossessed nouns, as the words [tsʰona] *fall*, [hada] *old*, [awa] *tree* and [madiha] *people* illustrate. Possession of alienable nouns is not indicated morphologically.

Madija, also known as Culina, is spoken by about 2,500 people in Peru and Brazil in the Juruá Purús river basin. The data in this problem were collected by Patsy Adams Liclán and Arlene Agnew, who worked in this language for more than thirty years. The data and an analysis appeared in Liclán and Marlett 1990.

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[1] The sound written as *w* in these data is phonetically [β] before front vowels.

[2] There are three prefixes for third person in verbs: zero, i- and to-. The phonological patterns which the latter two exhibit are the same as those seen with the nouns. For discussion of verb agreement morphology, see Wright 1988. The suffix -ni occurs only with nouns of this class (inalienably possessed nouns). It does not occur on verbs.

Vowel Features in Madija

(Peru)

	my	*your*	*his*	*her*	
1.	okone	tikone	kone	konani	*hair*
2.	otati	titati	tati	tatini	*head*
3.	opano	tipano	pano	panoni	*face*
4.	owede	tide	ide	ideni	*back*
5.	oweme	time	ime	imani	*flesh*
6.	owino	tino	ino	inoni	*tooth*
7.	owipo	tipo	ipo	iponi	*lower lip*
8.	owene	tene	ene	eneni	*nose*
9.	oweteɾo	teteɾo	eteɾo	eteɾoni	*skin*
10.	owebeno	tebeno	ebeno	ebenoni	*tongue*
11.	owenede	tenede	enede	anadani	*chin*
12.	owebetʰe	tebetʰe	ebetʰe	abatʰani	*cheek*
13.	owepe	tepe	epe	apani	*navel*
14.	owatsʰiɾe	tetsʰiɾe	atsʰiɾe	atsʰiɾani	*form*
15.	owahaɾi	teheɾi	ahaɾi	ahaɾini	*mouth*
16.	owatʰi	tetʰi	atʰi	atʰini	*word*
17.	owamoɾi	temoɾi	amoɾi	amoɾini	*foot*
18.	owati	teti	wati	watini	*liver*
19.	owapi	tepi	wapi	wapini	*shape*
20.	owaɾibo	teɾibo	waɾibo	waɾiboni	*ear*
21.	owahohoɾi	tehohoɾi	wahohoɾi	wahohoɾini	*mastoid area*

The forms for *one's* ... are the same as for *my* ..., but with an initial *t*: [tokone] *one's hair*. The forms for *our* ... are the same as for *your* ..., but without the initial *t*: [ikone] *our hair*.

Vowel Length in Seri Possessed Nouns

Stephen A. Marlett and Mary B. Moser

The difference between long and short vowels in Seri verbs is very obvious due to conjugation patterns, but less so in nouns. As a result, an adequate analysis of Seri possessed nouns has never been presented. In fact, the difference between the second and third set of nouns included in this data squib was not fully appreciated and therefore virtually ignored in Marlett 1981. (The difference is slight enough that one might try to explain it by a phonetic rule.)

The first set of nouns (of which there are many more examples) have consonant-initial roots. In general, stress appears on the first syllable of the root. A subset of these nouns begins with *j*, and these conjugate somewhat differently. The second and third set of nouns display the remaining patterns which occur. Obviously the vowels with which noun roots of this class begin are extremely restricted.

As for verbs, those beginning with single *a* or *æ* conjugate differently from those beginning with other vowels, including *aa* and *ææ* (Marlett 1981, Marlett and Stemberger 1983, Marlett 1994). Compare the forms of the verb {-ɑpɬ} *lick*, itɑ́pɬ (realis), ijóopɬ (distal), imíipɬ (proximal), with the forms of the verb {-ɑɑpɬ} *be cold*, tɑ́ɑpɬ (realis), jɑ́ɑpɬ (distal), mɑ́ɑpɬ (proximal). With possessed nouns, however, the roots which begin with vowels conjugate essentially alike except that in one set the vowels are short and in one set the vowels are long. The question is, What is different about the underlying form of nouns and verbs that accounts for the different ways in which they conjugate?

Seri is spoken by about 700 people who live in the state of Sonora in northwestern Mexico. The data presented here were collected by Edward and Mary Moser between 1951 and the present; the citation forms of these words appear in a dictionary that is currently being prepared. The forms of the nouns used for unspecified possessor are less commonly encountered and more difficult to elicit; hence a form is not provided for all nouns.

The transcription used in this presentation of data is based on IPA conventions. Some phonetic detail is omitted.

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Vowel Length in Seri Possessed Nouns

(Mexico)

The first column is the third person possessed form. The second column is the form used for an unspecified possessor. There is no form in which the root appears without an affix.

Set 1

1.	iɬít	?aɬít	*head*	8.	itǽn	?atǽn	*mouth*
2.	iɬXái		*back of neck*	9.	iXái		*root*
3.	ináiɬ	?anáiɬ	*skin*	10.	jákʷx	?ajákʷx	*ankle*
4.	inʃǽt		*heel*	11.	jáX	?ajáX	*belly*
5.	ipXási	?apXási	*flesh*	12.	jǽn	?ajǽn	*face*
6.	isít	?asít	*earring*	13.	jǽsoɬ		*venom*
7.	itáaka	?atáaka	*cheek*				

Set 2

14.	íi	?ái	*black louse*	28.	ískt	?áskt	*lung*
15.	ímas		*personal hair*	29.	ísɬa		*ear*
16.	ímoʃ	?ámoʃ	*heart*	30.	íso		*bag (of pelican)*
17.	ímt	?ámt	*breast*	31.	ístx		*leaf*
18.	ímtx	?ámtx	*tendon*	32.	ít		*base*
19.	ína	?ána	*hair, feather*	33.	ítæxa		*bladder*
20.	ínoɬ	?ánoɬ	*arm*	34.	ítiX		*remains*
21.	ínʃ	?ánʃ	*spinal cord*	35.	íto	?áto	*eye*
22.	íonam	?áonam	*hat*	36.	ítx		*buttocks*
23.	ípɬ	?ápɬ	*tongue*	37.	íX	?áX	*liquid, water*
24.	ípos	?ápos	*throat*	38.	íXak		*nit*
25.	ípʃ		*lash (of eye)*	39.	íXʃ	?áXʃ	*pet*
26.	ísæɬ		*shoulder joint*	40.	íjas		*liver*
27.	ísk	?ásk	*white louse*				

Set 3

41.	íiɸ	?áaɸ	*nose*	47.	íistoX	?áastoX	*souls*
42.	íip	?áap	*tail*	48.	íiʃk		*front of body*
43.	íipni	?áapni	*front of head*	49.	íiʃtim		*hipbone*
44.	íisa		*tonsils*	50.	íixk		*strength*
45.	íisaX	?áasaX	*soul*	51.	íiXʷni		*placenta*
46.	íist		*egg (of fish)*	52.	íiXt		*edge of flipper*

The forms for first and second person possessor are usually the same as for third person possessor except that the first person form begins with *?* and the second person form begins with *m*: ?ináiɬ *my skin*, mináiɬ *your skin*. For *j*-initial roots, the first person form begins with *i?* and the second person form begins with *in*: i?jǽn *my face*, injǽn *your face*. The *i* is epenthetic and does not appear if the preceding word ends in a vowel. The *n* is the result of a general assimilation rule that applies to the nasal *m* in unstressed syllables.

Seri Vowels and the Obligatory Contour Principle

Stephen A. Marlett and Mary B. Moser

A serious question in the past, under the assumptions of certain phonological theories, was whether phonetically long vowels in Seri should be analyzed as vowel clusters or as long vowels. The data presented here, based on regular and well-attested conjugation patterns of Seri verbs, present clear evidence as to how this question should be answered. It is clear that underlying long vowels are not vowel clusters; the conjugation pattern of verbs with single *a* are totally different from the conjugation pattern of verbs with double *aa*, for example. However, there are two ways in which true vowel clusters arise. One is the result of affixation: the proximal realis prefix {`mi-`} plus the root {`-ai`} *say to*, gives the vowel cluster *ii*. The second is the result of a word formation process, such as in the derivation of plural and repetitive forms: the *i* of the verb {`-aitom`} *talk* changes to *aa* in the repetitive; nevertheless, the repetitive form conjugates like verbs beginning with short *a*, not like verbs beginning with a long *a*. These facts provide confirmation of the predictive value of the Obligatory Contour Principle (see McCarthy 1986, Yip 1988, and the works cited in them).

Seri is spoken by about 700 people who live in the state of Sonora in northwestern Mexico. The data presented here were collected primarily by Edward and Mary Moser between 1951 and the present. The results of further study and analysis appear in Marlett 1981 and in Marlett and Stemberger 1983.

The transcription of data presented here follows IPA conventions. Some phonetic detail is omitted.

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Seri Vowels and the Obligatory Contour Principle

(Mexico)

	Distal[1]	*Proximal*	*Realis*	*Subj. Nom.*[2]	*Obj. Nom.*[2]	*Imperative*	
1.	jóoɸp	míiɸp	táɸp	íiɸp			*arrive*
2.	jóoʃkam	míiʃkam	táʃkam	íiʃkam			*arrive (pl.)*
3.	jóotæxɑ	míitæxɑ	tǽtæxɑ	íitæxɑ		kǽtæxɑ	*stagger*
4.	ijóomæn	imíimæn	itǽmæn	íimæn	óomæn	kǽmæn	*winnow (it)*
5.	ijóoʃt	imíiʃt	itáʃt	íiʃt	óoʃt	káʃt	*tattoo (him/her)*
6.	ijóom	imíim	itám	íim	óom	kám	*swallow (it)*
7.	jáɑ	máɑ	táɑ	jáɑ			*flat*
8.	jáɑkox	máɑkox	táɑkox	jáɑkox			*big*
9.	jáɑɸʃX	máɑɸʃX	táɑɸʃX	jáɑɸʃX		?áɑɸʃX	*sneeze*
10.	ijǽætoɬ	imǽætoɬ	itǽætoɬ	i?ǽætoɬ	jǽætoɬ	?ǽætoɬ	*push (it)*
11.	ijáɑʃi	imáɑʃi	itáɑʃi	i?áɑʃi	jáɑʃi	?áɑʃi	*carry*
12.	ijáɑkɑ	imáɑkɑ	itáɑkɑ	i?áɑkɑ	jáɑkɑ	?áɑkɑ	*send (it)*
13.	ijáɑɸk	imáɑɸk	itáɑɸk	i?áɑɸk	jáɑɸk	?áɑɸk	*pound (it)*
14.	jóitom	míitom	táitom	íitom		káitom	*talk*
15.	jóɑɑtim	mǽɑɑtim	táɑɑtim	ǽɑɑtim		káɑɑtim	*talk (rep.)*
16.	ijói	imíi	itái	íi		kái	*say to (him/her)*
17.	ijóɑɑm	imǽɑɑm	itáɑɑm	ǽɑɑm			*say (pl.) to (him/her)*
18.	ijóiiX	imíiiX	itáiiX	íiiX	óiiX	káiiX	*leave (place)*
19.	ijóɑɑXim	imǽɑɑXim	itáɑɑXim	ǽɑɑXim	óɑɑXim		*leave (place, rep.)*
20.	jáɑiɬ	máɑiɬ	táɑiɬ	jáɑiɬ			*spacious*
21.	jáɑɑx	máɑɑx	táɑɑx	jáɑɑx			*spacious (pl.)*
22.	ijáɑisX	imáɑisX	itáɑisX	i?áɑisX	jáɑisX	?áɑisX	*clean (it)*
23.	ijáɑɑsXim	imáɑɑsXim	itáɑɑsXim	i?áɑɑsXim	jáɑɑsXim	?áɑɑsXim	*clean (it, rep.)*
Two irregular verbs							
24.	ijóɑ	imíjɑ	itáɑ	íjɑ	okóɑɑ	káɑ	*know (it)*
25.	ijóæ	imíjæ	itǽæ	ijóæ		kǽæ	*give (it) to (him/her)*

---

[1] Finite verb forms are cited with third person subject (zero) and (when transitive) third person object.

[2] The Actor Nominalization and Object Nominalization forms are inflected for third person possessor.

Switch Reference in Seri

Stephen A. Marlett and Mary B. Moser

Switch reference systems have attracted attention since they were first described as such by Jacobsen 1967. The Seri facts presented here have challenged the most detailed theoretically-oriented account of such systems (Finer 1985a, Finer 1985b), despite the relatively simple appearance of the system. The Seri switch reference system, apparently unlike other switch reference systems, is not keyed in to the superficial subject of the clause nor to some notion like Agent, Actor, or deep structure Subject. Passive clauses and those with Raising are very relevant facts, besides clauses with impersonal verbs like *rain* and verbs with nonvolitional action like *die* (which interact just like verbs with volitional action).

Seri is spoken by about 700 people who live in the state of Sonora in northwestern Mexico. The data presented here were collected primarily by Edward and Mary Moser between 1951 and the present. Further data were collected by Steve Marlett between 1976 and 1981. Basic data and analysis are presented in various publications (listed below) by Moser, Marlett, and most recently Farrell, Marlett and Perlmutter.

This data squib presents key data in one place and in one orthographic form (the practical orthography). The interlinear translations, while not morpheme by morpheme or even word by word, are fairly literal. Switch reference marking appears on verbs in the dependent realis (*t*-, switch reference marker *ma*) and verbs in the dependent irrealis (*po*-, switch reference marker *ta*). These verb forms are translated with simple past and simple future forms in the English interlinear glosses. There are no words such as *if*, *when*, *as*, *while*, *after*, etc., in Seri, but these are supplied in the free translation line as appropriate, although other translations may also be possible. Similarly, nominalized clauses are translated below with simple tense in English.

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Switch Reference in Seri

(Mexico)

Basic Data

(1) _Pocoo(*ta)_ _siizcamaha._
they will be all they will arrive
All of them will arrive.

(2) _Pocoota_ _nsiihitaha._
they will be all you will eat them
You should eat them all.

(3) _Tcoo(*ma)_ _yaanipxat._
they were all they went home
They all went home.

(4) _Tcooma_ _imiitolca._
it was all they ate it
They ate all of it.

(5) _Impoofpta_ _tmaticpan._
you will arrive s/he can work
When you arrive, s/he can work.

(6) _Tapcama_ _hpyiim._
it rained I slept
I slept while it rained.

(7) _Toxi(*ma)_ _mheemt._
it died it stank
It stank after it died.

(8) _Mizj tama_ _he yomaamx._
it was well s/he didn't tell it to me
S/he didn't tell it to me correctly.

(9) _Him tcaznima_ _hpyaha._
it bit me I cried
Since it bit me, I cried.

(10) _Minl quih pozatxtax_ _insoohaha._
your fingers will have thorns in them you will cry
If your fingers get thorns in them, you will cry.

(11) _Tommequema_ _hyomasi._
it wasn't warm I didn't drink it
Since it wasn't warm, I didn't drink it.

(12) _Hapaspoj zo mpaaita_ _hpaazitax_ _cocsar zo haquix mopa(*ta)x_
you will make a paper I will carry it an outsider will come along

he poofp(*ta)x _ziix zo him iseaha._
s/he will arrive to me s/he will give me something

If you make a paper, and I carry it, when an outsider comes along and s/he comes to me, s/he will give me something.

(13) _Yoofp(*ma/*ta)_ _xo_ _hymaho._
s/he arrived but I didn't see him/her.
S/he arrived but I didn't see him/her.

Data with Passive

(14) *Ihpahcaznitax ihpsoohaha.*
I will be bitten I will cry
If I am bitten, I will cry.

(15) *Hap quih toxima yopahit.*
the deer died it was eaten
Whenever a deer died, it (the deer) was eaten.

(16) *Cöset hapah hehe cap tpezima tatax yoque.*[1]
the tree called Cöset was defeated he went away it is said
The tree called Cöset was defeated, (and) he went away, it is said.

(17) *Haat quih pahcaax heepol quih mos sahcaaha.*
limberbush will be looked for white ratany will also be looked for
Whenever limberbush is looked for, white ratany (plant) should also be looked for (at the same time).

Data with Raising

(18) *Ma hiizt ihpmaapxa.*[2]
my tattooing you I was three
I tattooed you three times.

(19) *Moxima quih iqui iipca maapxa.*
its raining yesterday it was three
It rained three times yesterday.

(20) *Hipazt quih yootxo / hpyahatxo.*[3]
my being tattooed it was many / I was many
I was tattooed many times.

(21) *Mipazt quih pootxotax / impahatxo(*ta)x insoohaha.*
your being tattooed it will be many / you will be many you will cry
If you are tattooed many times, you will cry.

(22) *Haxz himcop him icatxla quih pahatxo(*ta)x soxiaha.*
that dog's biting me he will be many he will die
If that dog bites me many times, he will die.

(23) *Sooda coopol quih ipasi quih pocahatxo(*ta)x hacx scamiihaha.*
cola soda's being drunk one will be many one will die
If cola soda is drunk often, one will die.

---

[1] Switch reference marking never appears before a quotative verb like *yoque*.

[2] Literal translation is not very meaningful here. The tensed verb is inflected for person (as shown), and when it is so inflected in agreement with the (superficial) subject of the lower clause, the number verb also carries an extra prefix. The verb of the lower clause occurs in a nominalized form.

[3] When the complement clause is passive, there are two possibilities: without raising (the simple verb), or with raising (the derived verb has person agreement as discussed above).

Nasalization in Huajuapan Mixtec

Stephen A. Marlett

Nasalization is an important component of the phonology of Mixtec, as illustrated by the data included in this data squib. It has received different analyses over the history of the study of Mixtec languages. Nasalization is analyzed in Marlett 1992 as a morpheme-level feature rather than a segment-level feature. For example, [β] and [m] are manifestations of a labial sonorant, without and with nasalization, respectively. Under this analysis, [nd] and [n], as well as [ʒ] and [ɲ] are similarly paired. A morpheme is either nasal or not; the nasal feature docks on the right side of the morpheme.

The data included here are also illustrative of various facts about Mixtec languages, including the necessity of independent words having two vowels (or syllables, or morae, depending on the analysis), and the strong tendency toward having identical vowels if the second syllable does not begin with a consonant. The glottal stop is analyzed as a prosodic feature in Macaulay and Salmon (to appear).

Mixtec is a large family of closely related languages spoken primarily in the state of Oaxaca, Mexico. The data from Huajuapan Mixtec presented here, based entirely on Pike and Cowan 1967, are representative of the family in certain ways. The fact that the high round vowel is front rather than back is atypical for Mixtec languages, however.

The data are given in a broad phonetic transcription using IPA symbols. Pike and Cowan (1967) analyze [kw] as a contrastive labialized velar stop, and [kj] as a palatalized allophone of *k* which appears before front vowels. (I have added the indication of nasalization to the off-glides of these sounds, where appropriate.) Tone has been omitted in this presentation of the data.

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Nasalization in Huajuapan Mixtec
(Mexico)

1.	βaʔa	*good*
2.	βeʔe	*house*
3.	βitʃi	*now*
4.	βiði	*sweet*
5.	βiko	*cloud*
6.	tʃelo	*calf*
7.	tʃĩĩ	*fingernail*
8.	tʃika	*banana*
9.	tʃõõ	*work*
10.	ðãʔmã	*clothing*
11.	ðãmã	*will change*
12.	ðaʃi	*nephew*
13.	ðeʔe	*son*
14.	ðẽʔẽ	*lard*
15.	ðitʃi	*nose*
16.	ðiko	*will sell*
17.	ðikõ	*neck*
18.	ðĩʔã	*buzzard*
19.	ðĩnĩ	*head*
20.	ðita	*tortilla*
21.	ðito	*uncle*
22.	ðĩʔĩ	*leg*
23.	ðoʔo	*ear*
24.	ðõʔnõ	*shirt*
25.	ðykjy	*niece*
26.	kaβa	*will lie down*
27.	kãʔã	*wants*
28.	katʃi	*cotton*
29.	kaʃa	*hard thing*
30.	kjeðõ	*will sneeze*
31.	kjĩnĩ	*poor quality*
32.	koko	*will swallow*
33.	kõɲõ	*meat*
34.	koo	*snake*
35.	koʔo	*plate*
36.	kõmĩ	*four*
37.	kõnĩ	*yesterday*
38.	kwali	*horse*
39.	kw̃ãʔã	*yellow*
40.	kwaʔa	*red*
41.	kwee	*slow*
42.	kjete	*will dig*
43.	kjiti	*animal*
44.	kjya	*year*
45.	kjyka	*comb*
46.	kjykjy	*is sewing*
47.	lasa	*bone*
48.	lende	*navel*
49.	lekw̃ã	*eyebrow*
50.	ndaʔa	*hand*
51.	ndee	*is caring for*
52.	ndeʔe	*is watching*
53.	ndeʔi	*mud*
54.	ndiði	*pulque (beverage)*
55.	ndisa	*sandal*
56.	ndoo	*sugarcane*
57.	ndoko	*zapote (fruit)*
58.	ndoto	*split wood*
59.	ndytʃi	*bean*
60.	ɲãmã	*corn husk*
61.	ɲãnĩ	*brother*
62.	ɲẽʔẽ	*is scratching*
63.	ɲõõ	*town*
64.	nĩnõ	*above*

65.	nõ?õ	*fire*
66.	sɑði	*is closing*
67.	sɑɑ	*new*
68.	sɑ?ɑ	*foot*
69.	sõ?nɪ	*is tying*
70.	sõnã	*is opening*
71.	ʃẽẽ	*is buying*
72.	ʃito	*bed*
73.	ʃitõ	*oven*
74.	ʃii	*grandfather*
75.	ʃɪ?ɪ	*mushroom*
76.	ʃoo	*griddle*
77.	tɑtɑ	*medicine*
78.	te?nde	*is cutting*
79.	tei	*chair*
80.	titʃi	*avocado*
81.	tilɑ	*bird*
82.	tɪnã	*dog*
83.	tiʃi	*stomach*
84.	tiʒɑkɑ	*fish*
85.	tõmɪ	*feather*
86.	tyty	*paper*
87.	ʒɑɑ	*tongue*
88.	ʒɑkwɑ	*crooked*
89.	ʒe?e	*door*
90.	ʒikõ	*furrow*
91.	ʒitõ	*tree*
92.	ʒoko	*steam*
93.	ʒoo	*water jug*
94.	ʒoðo	*grinding stone*
95.	ʒo?o	*rope*
96.	ʒy?ɑ	*thread*
97.	ʒy?y	*mouth*
98.	ʒyy	*rock*
99.	ʒitõ	*tree*
100.	?iɑ	*sour*
101.	?i?i	*raw*
102.	?ɪɪ	*salt*
103.	?ɪõ	*thorn*
104.	?ɪnɪ	*warm*
105.	?ɪnõ	*six*
106.	?oɑ	*bitter*
107.	?ysɑ	*seven*

Texmelucan Zapotec Verbs

Charles H. Speck

Texmelucan Zapotec verb conjugations illustrate some common phonological processes like deletion, palatalization, lenition, assimilation and dissimilation. At least some of these function to accommodate syllabification. Most of these processes can be seen in the data from Table 1 (Regular verbs, the positive paradigm). Verbs in this table are inflected for Potential aspect, which occurs in frames with the adverb meaning *tomorrow*; Imperfective aspect, which occurs frames with *always*; Completive aspect, which occurs in frames with *yesterday*; and the Unreal aspect, which occurs in counterfactual clauses.

The morphology of the negative paradigm shown in Table 2 is not very straightforward. Neither the Completive prefix nor the Imperfective prefix co-occurs with the Negative prefix. I analyze the Potential prefix as occurring in the form elicited with *never* and the form meaning *did not*, but not with the form meaning *will not*; no aspect at all occurs on the latter. (This skewing between form and meaning is discussed in Speck 1984.) Given an analysis of the morphology along these lines, some of the same phonological processes seen in the positive paradigm are illustrated in the negative paradigm.

Table 3 (Causative forms) shows that the causative stem is formed by laryngealizing the stem of the non-causative and adding a prefix. These data illustrate some of the same phonological processes seen in the other paradigms.

In Table 4, *ride* and *seek* have the same underlying stem, {jub}, but conjugate differently. The conjugation of *seek* illustrates a highly marked positive exception to the rule of velar deletion. Underlying {k-} (Potential) shouldn't delete before *j*, but it does with the verb for seek.

Most stems that begin with *d*, *l*, or *ɛ* are irregular in that they have a different form in the first person than in the second and third persons. The second person and third person completive is sometimes like the first person and sometimes like the rest of the second person paradigm. These data provide yet additional evidence for some of the processes shown above. They also show some exceptional behavior with respect to several of them.

IPA symbols are used in the transcription of the data. However, the symbols *kj* and *gj* represent palatalized palatal stops (hence the nasal assimilation facts) derived from underlying velars. Tilde under a vowel represents a laryngealized vowel.

Texmelucan Zapotec is spoken by about 4000 people in the District of Sola de Vega, Oaxaca, Mexico. The data have been collected by the author during continual work on the language since 1972.

Reference

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Texmelucan Zapotec Verbs

(Mexico)

Table 1. Regular Verbs, The Positive Paradigm

	Tomorrow	*Always*	*Yesterday*	*Would have*
die	gat	ɾat	gut	ɲgjat
hear	gjeɲ	ɾeɲ	gweɲ	ɲgjeɲ
do	gjikj	ɾikj	bikj[1]	ɲgjikj
drink[2]	goʔ	ɾoʔ	goʔ	ɲgjoʔ
ride	gjub	ɾjub	bjub	ɲgjub
count	lab[3]	ɬab	blab	nlab
teach	ljṵ	ɬṵ	bljṵ	ɲljṵ
leave	ɾṵ	dɾṵ	bɾṵ	nɾṵ
lose	neʔ	ɾneʔ[4]	mneʔ	nneʔ
guard	ɲa	ɾɲa	mɲa	ɲɲa
twist	tel	ɾtel	ptel	ntel
cross	ded	ɾded	bded	nded
be dry	kwigj	ɾbigj	bigj	mbigj
change	tʃo̰	ɾtʃo̰	ptʃo̰	ntʃo̰
bend	dʒoŋ	ɾdʒoŋ	bdʒoŋ	ndʒoŋ
love	ka	ɾka	pka	ŋka
tie	kjḭg	ɾkjḭg	pkjḭg	ɲkjḭg
move	kweɲ	ɾkweɲ	pkweɲ	ŋkweɲ
connect	gjid	ɾgjid	bgjid	ɲgjid
lie	gṵ	ɾgṵ	bgṵ	ŋgṵ
see	gwḭ	ɾgwḭ	bgwḭ	ŋgwḭ
slice	sug	ɾsug	psug	nsug
study	sjo̰	ɾsjo̰	psjo̰	nsjo̰
be drunk	zugj	ɾzugj	bzugj	nzugj
tear	ʃo̰	ɾʃo̰	pʃo̰	nʃo̰

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[1] The few *i*-initial stems known to exist appear to be irregular in the Completive. One would expect forms like *gwicj, but they have never been attested.

[2] The verb for *drink* conjugates this way in the second and third person (see Table 5).

[3] In some ill-understood semantic or discourse environments, a velar stop can appear in the onsets of the forms in this column. The conditions for the appearance of this segment, however, are not purely semantic, but seem also to be related to sonority sequencing. It appears frequently before sonorants producing forms like glab, gljṵ, gɾṵ, and gneʔ. There are fewer examples before sibilants, producing forms like ksug, ksjo̰, and gzug. Although its appearance before stops has been attested, producing forms like gded or kted, they are very rare. It never appears before another velar.

[4] The sound written ɾ is voiceless except when is precedes a vowel or glide.

Table 2. Regular Verbs, The Negative Paradigm

	Will not	*Never*	*Did not*
die	wat	wagat	wangat
hear	wajeɲ	wagjeɲ	wangjeɲ
do	wajikj	wagjikj	wangjikj
drink	woʔ	wagoʔ	wangoʔ
ride	wajub	wagjub	wangjub
count	walab	waglab	wanlab
teach	waljụ	wagljụ	wanljụ
leave	waɾụ	wagɾụ	wanɾụ
lose	waneʔ	wagneʔ	wanneʔ
guard	waɲa	wagɲa	wanɲa
twist	watel	waktel	wantel
cross	waded	wakted	wanted
be dry	wabigj	wakwigj	wankwigj
change	wat ʃọ	wakt ʃọ	want ʃọ
bend	wadʒoŋ	wakt ʃoŋ	want ʃoŋ
love	waka	waka	wanka
tie	wakjịg	wakjịg	wankjịg
move	wakweɲ	wakweɲ	wankweɲ
connect	wagjid	wagjid	wangjid
lie	wagụ	wagụ	wangụ
see	wagwị	wagwị	wangwị
slice	wasug	waksug	wansug
study	wasjọ	waksjọ	wansjọ
be drunk	wazugj	waksugj	wansugj
tear	wa ʃọ	wak ʃọ	wan ʃọ

Table 3. Regular Causatives

	Tomorrow	*Always*	*Yesterday*
be born	gɑl	ɾɑl	gul
give birth	gɑ̣l	ɾgɑ̣l	bgɑ̣l
be on	gwɑ	ɾgwɑ	bgwɑ
put on	kwɑ̣	ɾkwɑ̣	bkwɑ̣
be attached	kɑ	ɾkɑ	pkɑ
attach	kɑ̣	ɾkɑ̣	pkɑ̣
be dry	kwigj	ɾbigj	bigj
dry	kwị̣gj	ɾkwịgj	pkwịgj
be full	dʒɑ	ɾdʒɑ	bdʒɑ
fill	tʃɑ̣	ɾtʃɑ̣	ptʃɑ̣
be finished	lɑʒ	ɬɑʒ	blɑʒ
finish	lɑ̣ʒ	ɬɑ̣ʒ	blɑ̣ʒ
take a bath	lɑ̣gj	ɬɑ̣gj	blɑ̣gj
bathe[5]	lɑ̣gj	ɬɑ̣gj	blɑ̣gj
walk	zɑ	ɾzɑ	bzɑ
transport	sɑ̣	ɾsɑ̣	psɑ̣
slip(int)	ɾilj	dɾilj	bɾilj
slip(tr)	ɾịlj	dɾịlj	bɾịlj
be attached	dɑʔ	ɾdɑʔ[6]	bdɑʔ
attach	tɑʔ	ɾtɑʔ	ptɑʔ

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[5] lɑ̣gj appears to be like the English verb *open* where the agent is optional and the patient is obligatory. I know of no other Zapotec verbs like that. The fact that the intransitive stem is laryngealized and that it begins with a sonorant suggests a phonological relationship.

[6] Most verbs do not have a Progressive form distinct from the Imperfective form. This verb has a distinct Progressive form tɑʔ.

Table 4. The Two Conjugations of {jub}

ride	gjub	ɾjub	bjub	ɲgjub
	wajub	wagjub	wangjub	
seek	jub[7]	ɾjub	bjub	njub
	wajub	wagjub	wanjub	

Table 5. Verbs With Irregular Stems

		Tomorrow	*Always*	*Yesterday*	*Should have*
grind	(1st	dõ	ɾdõ	bdõ	ndõ
	(2nd)	goɾ	ɾoɾ	go̰ɾ	ɲgjo̰ɾ[8]
beaten	(1st	ɾuzã	dɾuzã	bɾuzã	nɾuzã
	(2nd)	gaz ɾu	ɾaz ɾu	guz ɾu	ɲgjaz ɾu
pay	(1st	ɾiʃã	dɾiʃã	bɾiʃã	nɾiʃã
	(2nd)	kjiʃ ɾu	ɾgjiʃ ɾu	bɾḭʃ ɾu	ɲgjiʃ ɾu
distribute	(1st	lezã	ɬezã	blezã	nlezã
	(2nd)	kjez ɾu	ɾgjḭz ɾu	blḭz ɾu	ɲgjḭz ɾu
wait	(1st	lezã	ɬezã	blezã	nlezã
	(2nd)	kwez ɾu	ɾbez ɾu	blez ɾu	mbez ɾu
call	(1st	ɾedʒã	dɾedʒã	bɾedʒã	nɾedʒã
	(2nd)	kwedʒ ɾu	ɾbedʒ ɾu	bɾedʒ ɾu	mbedʒ ɾu
sing	(1st	dulã	ɾdulã	bdulã	ndulã
	(2nd)	gul ɾu	ɾul ɾu	bḭl ɾu	ɲgjṵl ɾu
relate[9]	(1st	do dũ	ɾdo dũ	bdo dũ	ndo dũ
	(2nd)	go nuɾ	ɾo nuɾ	bḭ nuɾ	ɲgjo̰ nuɾ

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[7] The form `gjub` has been attested, albeit rarely (see note 3).

[8] Alternations in laryngealization are the result of interaction with tone which is not represented here (see Speck 1978).

[9] The meaning of *relate* is literally *grind with*. The stem for the morpheme *with* has two forms; {du} occurs with the first person and {nu} with the second and third person.